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**135-TRC-05-003**

**SAFETY COMPLIANCE TESTING FOR FMVSS 135**  
**Passenger Car Brake Systems**

General Motors Corporation  
2005 Chevrolet Equinox FWD LT, 4-Door Liftback MPV  
NHTSA No. C50100

**TRANSPORTATION RESEARCH CENTER INC.**  
10820 State Route 347  
East Liberty, Ohio 43319



Final Report Completed: November 12, 2004

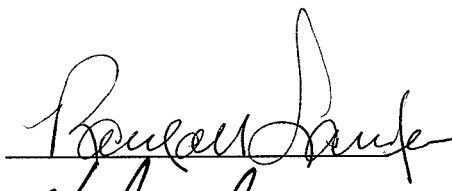
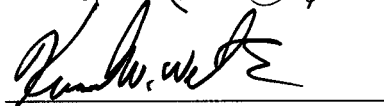
FINAL REPORT

Prepared Under Contract No.: DTNH22-01-C-21025

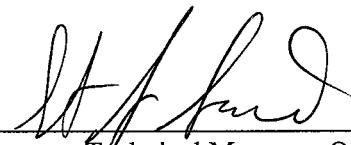
**U.S. DEPARTMENT OF TRANSPORTATION**  
**National Highway Traffic Safety Administration**  
**Enforcement**  
**Office of Vehicle Safety Compliance**  
400 Seventh Street, SW  
Room 6115 (NVS-220)  
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration,  
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Prepared By   
Approved By   
Approval Date: 11/16/04

Final Report Acceptance By OVSC:

  
Contract Technical Manager, Office of  
Vehicle Safety Compliance  
11/22/04  
Acceptance Date



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		6. PERFORMING ORGANIZATION CODE: TRC 20000113/5352	
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15. SUPPLEMENTARY NOTES:			
16. ABSTRACT:  Compliance tests were conducted on the subject 2005 Chevrolet Equinox FWD LT, 4-Door Liftback MPV, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-135-00 for the determination of FMVSS 135 compliance. Test failures identified were as follows:  None.			
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## 1.0 INTRODUCTION

Tests were conducted on a 2005 Chevrolet Equinox FWD LT, 4-Door Liftback MPV, manufactured by General Motors Corporation, to determine compliance with FMVSS 135 "Passenger Car Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 135-00 and/or the corresponding TRC Inc. Test Procedure that was submitted to NHTSA for their approval. The test procedure was clearly described in the submitted document and has not been repeated in this report.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

### 7.5-Mile Test Track

Vehicle Maximum Speed

Burnish

Heating Snubs and Hot Performance Stops

Brake Cooling and Recovery Stops

### Skid Pad

Cold Effectiveness Stops

High Speed Effectiveness Stops

Stops with Engine Off

Failed Antilocks

Failed Variable Proportioning Valve (if applicable)

Failed Hydraulic Circuits

Brake Power Assist Unit Failures

RBS Failure

EMF (Battery) Failure

### Brake Slope

Parking Brake

Average PFC during the test period was 0.99 (Skid Pad) and 0.95 (Test Track) utilizing the ASTM E1337 w/E1336 tire method.

The test vehicle was ABS equipped. Therefore, the Wheel Lock Sequence and Adhesion Utilization Tests were not performed.

This vehicle met the requirements of FMVSS 135.

# DATA SHEET 1 - VEHICLE INFORMATION

## VEHICLE SPECS

Year: 2005	NHTSA No: C50100
Mfr: GENERAL MOTORS CORP.	GVWR (Kg): 2299.8
Make: CHEVROLET	GAWR Front(Kg): 1149.9
Model: EQUINOX FWD LT	GAWR Rear(Kg): 1149.9
Body Style: 4DR, LB, MPV	Wheelbase (mm): 2870.2
Mfr. Date: 05/04	Odometer: Start: 68 MI. End: 499 MI.
VIN: 2CNDL63F456031337	

## BUSES ONLY

Chassis Mfg.: N/A  
 Serial No.: N/A  
 No. of Seats: N/A  
 Manufacture Date: N/A

Engine Type: GASOLINE, 3400, V6, SFI, PISTON.	Tire Size: P235/60R17
Displacement: 3.4 LITER	Tire Type: 100S, DUELER, H/T, 684II, M&S, ST. H
Engine Hspwr: N/A	Tire Mfr.: BRIDGESTONE
Idle Speed(rpm): 695	GVWR Front Press.(kpa): 206.84
Transmission Type: AUTO. 5-SPD.	GVWR Rear Press.(kpa): 206.84
No. of Axles: 2	

## BRAKE APPLY SYSTEM

Brake Series: Front: DISC Rear: DRUM	Power Assist Unit: YES ✓
Brake Actuation	Pwr Unit w/Accumulator: NO
(Hydr. Circuit Split): DIAGONAL	Pwr Asst./Pwr Unit w/Backup: NO
Power Unit: VACUUM	Variable Prop. System: NO
Anti-Skid unit Mfr: BOSCH	Anti-Skid Device: YES ✓
Parking Mechanism: YES	
Type of Parking Unit: AUTOMATIC TRANSMISSION WITH PARK DETENT.	
Mstr Cylinder Dia(mm): 25.43	Pedal Ratio: 3.7 : 1 I

## FRONT SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST
Drum Construction: N/A	LF Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST, VENTED	RF Drum Shoe Cage Dia.(mm): 0.00
Front Brake Dia.(mm): 0.00	LF Drum Dia. RESET(mm): 0.00
Fr Disc Thickness(mm): 26.09	RF Drum Dia. RESET(mm): 0.00
Lining Construction: Bonded	
FRONT BRAKE COMPONENT DIMENSIONS AND CODES:	
Inboard (Leading)	Outboard (Trailing)
Width(mm): 44.91	Width(mm): 44.93
Length(mm): 140.16	Length(mm): 140.16
Thickness(mm): 9.55	Thickness(mm): 9.68
Lining Code/Color: AKEBONO NS171H FF	Lining Code/Color: AKEBONO NS171H FF
Hyd. Piston Dia.(mm): 45.90	

# DATA SHEET 1 - (CONTINUED)

## REAR SYSTEM

## BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DRUM	Material: CAST IRON
Drum Construction: CAST	LR Drum Shoe Cage Dia.(mm): 247.65
Disc Construction: N/A	RR Drum Shoe Cage Dia.(mm): 248.92
Lining Construction: BONDED	LR Drum Dia. RESET(mm): 248.69
Rear Brake Dia.(mm): 249.25	RR Drum Dia. RESET(mm): 248.69
Rr Disc Thickness(mm): 0.00	

### REAR BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)	Outboard (Trailing)
Width(mm): 45.31	Width (mm): 45.03
Length(mm): 250.82	Length (mm): 250.82
Thickness(mm): 6.40	Thickness (mm): 6.38
Lining Code/Color: NAC D9011-FF	Lining Code/Color: NAC D9011-FF
Hyd Piston Dia (mm): 22.28	

### OTHER COMPONENT INFORMATION:

Friction-type Park Brake: HAND-OPERATED  
Non-Service Brake Type  
Parking Brake: N/A

NOTE: If at any time after the test series has begun, any brake system part requires replacement or the brake system requires adjustments other than permitted in burnish and reburnish procedures, discontinue testing and notify the COTR immediately.

Technician:

  
KAREN EASTERDAY

Date:

11-16-04

Quality Assurance:

  
KEN WEBSTER

## 3.0 SUMMARY OF TESTING

		Specification and Limit				TEST RESULTS (In compliance if one stop meets requirement)			
TEST	Loading Conditio n	Speed (km/h)	Min. Pedal Force (N)	Max. Pedal Force (N)	Stopping Distance Requirement (m)	Shortest Stop Min. Pedal Force (N)***	Shortest Stop Max. Pedal Force Newtons (Average – N)	Shortest Stop Stopping Distance (m) (Corrected)	PASS Fail
Equipment Requirements					Specified Equipment	Vehicle contains specified equipment			Pass
Vehicle Maximum Speed	LLVW	NA				176.9 km/h avg.			NA
Burnish	GVWR	80				200, 80 - 0 km/h stops @ 3.0 mpsps			NA
Wheel Lockup Sequence w/o ABS	GVWR				Lockup of front wheels prior to rear	ABS Equipped			NA
Wheel Lockup Sequence w/o ABS	LLVW					ABS Equipped			NA
Adhesion Utilization w/o ABS	LLVW							Rear axle adhesion utilization curve below specified value	ABS Equipped
Adhesion Utilization w/o ABS	GVWR	ABS Equipped							NA
Cold Effectiveness	GVWR	100	65	500	70	5	482.9 ✓	51.4 ✓	Pass
High Speed Effectiveness	GVWR	141.5	65	500	spd. depend. – 148.2	5	469.9 ✓	96.8 ✓	Pass
Stops with Engine Off	GVWR	100	65	500	70	5	451.8 ✓	49.6 ✓	Pass
Cold Effectiveness	LLVW	100	65	500	70	5	479.7 ✓	47.7 ✓	Pass
High Speed Effectiveness	LLVW	141.5	65	500	spd. depend. – 148.2	5	486.5 ✓	88.0 ✓	Pass
Failed Antilock	LLVW	100	65	500	85	5	163.4 ✓	59.7 ✓	Pass
Failed Proportioning Valve	LLVW	100	65	500	110	5	NA	NA	NA
Failed Hydraulic Circuit #1	LLVW	100	65	500	168	5	484.3 ✓	93.1 ✓	Pass
Failed Hydraulic Circuit #2	LLVW	100	65	500	168	5	471.0 ✓	90.0 ✓	Pass
Failed Hydraulic Circuit #1	GVWR	100	65	500	168	5	484.1 ✓	95.2 ✓	Pass
Failed Hydraulic Circuit #2	GVWR	100	65	500	168	5	474.7 ✓	94.8 ✓	Pass
Failed Antilock	GVWR	100	65	500	85	5	266.6 ✓	55.0 ✓	Pass
Failed Proportioning Valve	GVWR	100	65	500	110	5	NA	NA	NA
Regenerative Brake System (RBS) Failure	GVWR	100	65	500	168	5	NA	NA	NA
Electromotive Force (EMF) – Battery Failure	GVWR	100	65	500	70	5	NA	NA	NA
Power Brake Unit Failure	GVWR	100	65	500	168	5	494.3 ✓	134.1 ✓	Pass
Parking Brake - Uphill	GVWR	-	-	400	Hold for 5 min.?	NA	379.9 ✓	Yes-Holds	Pass
Parking Brake - Downhill	GVWR	-	-	400	Hold for 5 min.?	NA	371.2 ✓	Yes-Holds	Pass
Heating Snubs	GVWR	120-60	NA	NA	15 Snubs- 3.0 mpsps	5	59 Visual Avg.	NA	NA
Hot Performance Stop #1	GVWR	100	65	370.5 avg. ✓	79.8	5	411.2 (318.6) ✓	52.5 ✓	Pass
Hot Performance Stop #2	GVWR	100	65	500	89	5	426.5 (355.6) ✓	51.7 ✓	Pass
Brake Cooling	GVWR	50	NA	NA	4 Stops - 3.0 mpsps	5	56 Visual Avg.	NA	NA
Recovery Performance Stop #1	GVWR	100	65	370.5 avg. ✓	One of the two stops between 69.8 and 37.9 meters	5	394.8 (292.2) ✓	46.3	Pass
Recovery Performance Stop #2	GVWR	100	65	370.5 avg. ✓		5	438.0 (315.2) ✓	50.8	
Final Inspection-Brake Integrity	Check components for detachment, fracture or lubricants.					No detachments or fractures-normal appear. & colr.			Pass
Final Inspection-Reservoirs/Warning Indicators	Master cylinder or brake power reservoir shall meet the volume and label requirements of S5.4.2 and S5.4.3.					Brake system has sufficient capacity and indicators are in compliance.			Pass

\*\*\* Note: The Shortest Stop Minimum Pedal Force represents the minimum force value required to engage the data acquisition's recording mode.

# DATA SHEET 3 - VEHICLE WEIGHT

VEHICLE: 2005 CHEVROLET EQUINOX FWD LT

NHTSA No. C50100 Date: 09/29/04

Tire Pressure(cold): Front (kpa) 207 Rear (kpa) 207

Odometer: Start 68 MI. End 499 MI.

Scale(s) Used: TRC Scales

NOTE: GVWR, LLVW and axle weights to be measured within +0% and -1%.

## GVWR/GAWR INFORMATION

(From Veh. Certification Label)

GVWR(Kg): 2300

GAWR Front(Kg): 1150

GAWR Rear(Kg): 1150

## UNLOADED VEHICLE WEIGHT(UVW)

L Front(Kg): 480 L Rear(Kg): 367

R Front(Kg): 472 R Rear(Kg): 355

T Front(Kg): 952 T Rear(Kg): 722

Total UVW(Kg): 1675

## TARGET LIGHT LOADED WEIGHT(LLVW):

## ACTUAL LIGHT LOADED WEIGHT(LLVW):

NOTE 1: LLVW = UVW+181.4Kg

NOTE 2: Weight distributed in front passenger seat area.

NOTE 3: Neither axle load at LLVW less than at UVW; ballast as required.

L Front(Kg): 529 L Rear(Kg): 412

R Front(Kg): 521 R Rear(Kg): 395

T Front(Kg): 1050 T Rear(Kg): 807

Total LLVW(Kg): 1857

L Front(Kg): 536 L Rear(Kg): 410

R Front(Kg): 514 R Rear(Kg): 396

T Front(Kg): 1051 T Rear(Kg): 805

Total Actual Test LLVW(Kg): 1856

Load: Driver/Observer 73(Kg) + Instru.41(Kg) + Ballast 68(Kg) = 181(Kg)

## FULLY LOADED TEST WEIGHT (ACTUAL GVWR)

NOTE 1: Vehicle loaded so axle loads proportional to GAWR shown previously.

NOTE 2: But no axle weight to be less than at LLVW.

NOTE 3: If weight on any axle at LLVW exceeds the axle's proportional share of the GVWR, the load required to reach GVWR is placed so that the weight on that axle remains the same as at LLVW.

L Front(Kg): 572 L Rear(Kg): 577

R Front(Kg): 578 R Rear(Kg): 573

T Front(Kg): 1149 T Rear(Kg): 1150

Total Fully Loaded GVWR(Kg): 2299

Load: Driver/Observer 73(Kg) + Instru. 41(Kg) + Ballast 511(Kg)= 625(kg)

Technician:

  
KAREN EASTERDAY

Date:

11-16-04

Quality Assurance:

  
KEN WEBSTER

# DATA SHEET 4 - EQUIPMENT REQUIREMENTS (S5)

## SERVICE BRAKE SYSTEM (S5.1)

Vehicle equipped with a service brake system acting on all wheels? YES

Wear Adjustment (S5.1.1):

Service Brakes are compensated for wear by means of a system of automatic adjustment? YES

Describe: DISC-AUTOMATIC CLEARANCE TAKE-UP.DRUM-AUTO.-ADJUST.

Wear Status (S5.1.2):

Wear status of service brakes is indicated by:

(A) Acoustic or optical device? YES

Describe: METAL TAB EMITS HIGH FREQUENCY SQUEAL WHEN WORN.

(B) Visual check outside or under vehicle? YES

Describe: FRONT:LOOK THROUGH CALIPER. REAR:LOOK THROUGH INSP.HOLE

## PARKING BRAKE SYSTEM (S5.2)

Vehicle equipped with a parking brake system of a friction type with solely mechanical means to retain engagement: YES

## CONTROLS (S5.3)

(A) Service brakes activated by means of a foot control? YES

(B) Parking brake control is independent of the service brake control? YES

(C) Parking brake control is hand or foot operated? YES

(D) ABS, if equipped, cannot be manually disabled? YES

DATA INDICATES COMPLIANCE: YES

COMMENTS: NONE.


Tester/Technician:

  
KAREN EASTERDAY

Date:

11-16-04

Quality Assurance:

  
KEN WEBSTER



# DATA SHEET 5 - VEHICLE MAX SPEED

VEHICLE: 2005 CHEVROLET EQUINOX FWD LT

NHTSA No. C50100

Date: 09/29/04

Ambient Temperature: 60°F

Wind Velocity: 5(MPH)

Road PFC: .96

Wind Direction: 346°

Odometer: Start 77(mi) End 92(mi)

TEST WEIGHT: Total (Kg): 1856

Front (Kg): 1051

Rear (Kg): 805

## ESTABLISH VEHICLE MAXIMUM SPEED

VEHICLE LOAD: LLVW

IBT: N/A

GEAR: Drive

DECEL RATE: N/A

PEDAL FORCE: N/A

WHEEL LOCKUP: N/A

TEST SPEED: Maximum attainable from

INTERVAL: N/A

a standing start in 3.2 km.

1. Ballast Vehicle to LLVW
2. Accelerate at a maximum rate from a standing start for a distance of 3.2 km on a level surface.
3. Repeat in opposite direction.
4. Record speed attained in each direction and use the average of the two runs.

	DIRECTION	MAX SPEED (km/h)		Time 0 - 100 KPH (seconds)
		Visual	Recorded	
Run No. 1	South	176.9 kph	177.0	10.33
Run No. 2	North	176.7 kph	176.7	10.52

AVERAGE = 176.9 km/h

COMMENTS: INV DATA, Section 0001, 09/29/04, 15:20:22

Tester/Technician:

*Karen Easterday*  
KAREN EASTERDAY

Date:

*11-16-04*

Quality Assurance:

*Ken Webster*  
KEN WEBSTER

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

Transportation Research Center, Inc.  
 10820 State Route 347  
 East Liberty, Ohio 43319  
 (937) 666-2011 www.trcpg.com

Date Tested: 09/29/04

## DATA SHEET 6 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0002, 09/29/04, 16:38:28

Weather Conditions: 68°F Wind: 3 mph 71°

Start Odo.: 92 End Odo.: 360

### Schedule:

Initial Brake Temperature Less Than 100°C  
 Initial Speed 80 km/h to zero  
 200 stops with transmission in gear

### Performance Requirements:

Interval between runs: Time necessary to reduce IBT to 100 C° or 2 km distance, whichever occurs first.  
 Constant decel rate: 3.0 m/s<sup>2</sup>  
 Pedal force adjusted to maintain constant decel.  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h  
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	AVG. DECEL (m/sec <sup>2</sup> )
1	79.51	95	95	58	64	78.86	59.72	2.73
10	79.73	101	96	68	78	68.41	52.69	2.83
20	80.02	95	101	71	84	65.12	50.12	2.72
30	80.46	96	98	69	86	105.40	56.35	3.09
40	80.78	100	101	66	78	67.53	56.14	2.80
50	80.75	98	102	72	87	66.49	50.73	2.83
60	80.15	104	103	74	89	69.91	53.17	2.66
70	79.23	99	107	76	89	66.09	53.08	2.78
80	79.95	103	101	76	89	70.52	58.00	2.74
90	80.85	100	99	72	82	66.00	54.12	2.68
100	81.68	104	107	77	92	65.24	54.67	2.83
110	80.71	103	106	79	93	92.73	49.75	2.79
120	80.86	103	106	81	97	68.44	50.52	2.66
130	79.90	103	107	79	98	68.63	49.45	2.60
140	81.77	104	111	77	92	67.96	52.23	2.72
150	79.69	107	104	79	88	70.52	55.80	2.74
160	79.95	96	99	74	85	77.30	59.77	2.77
170	79.16	104	108	81	96	71.22	54.79	2.75
180	79.83	104	107	79	93	76.97	55.74	2.83
190	80.33	100	107	81	96	71.32	56.14	2.81
200	79.25	100	102	77	91	72.32	55.92	2.80

COMMENTS: THIS VEHICLE ABS EQUIPPED. DATA SHEETS 7-10 NOT INCLUDED.

## BRAKE ADJUSTMENT

### Schedule:

Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED  
 Right Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED  
 Left Rear: DRUM DRUM BRAKE NO ADJUSTMENT REQUIRED.  
 Right Rear: DRUM DRUM BRAKE NO ADJUSTMENT REQUIRED.  
 DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/04/04

Approving Laboratory Official: KEN WEBSTER

Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

Transportation Research Center, Inc.  
10820 State Route 347  
East Liberty, Ohio 43319  
(937) 666-2011 www.trcpg.com

Date Tested: 10/01/04

## DATA SHEET 11 - COLD EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0015, 10/01/04, 10:55:34

Weather Conditions: 64°F Wind: 8 mph 136° Start Odo.: 368 End Odo.: 374

### Schedule:

Initial Brake Temperature 65 - 100 C  
Initial Speed 100 km/h to zero  
6 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
Stopping Distance less than 70m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	100.41	81	82	53	45	51.9	51.4	482.89	370.51	10.92	6.46
2	99.56	94	97	63	54	53.5	54.0	473.29	371.37	14.80	6.52
3	99.69	92	93	61	52	54.3	54.7	488.88	397.85	13.66	6.47
4	100.40	94	94	63	52	54.6	54.1	492.70	381.70	11.22	6.51
5	100.11	76	76	53	46	56.1	56.0	523.10	414.03	12.31	6.56
6	99.63	87	91	60	50	53.7	54.1	455.83	330.82	12.03	5.98

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

Corrected Distances are used to determine shortest stopping distance.

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

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## DATA SHEET 12 - HIGH SPEED EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0020, 10/01/04, 11:49:46

Weather Conditions: 70°F Wind: 15 mph 137° Start Odo: 375 End Odo: 385

### Schedule:

Initial Brake Temperature: 65-100°C  
Initial Speed: 80% max km/h, not greater than 160km/h  
6 stops with transmission in gear

### Performance Requirements:

One Stop with:  
Stopping Distance less than: 148.3 meter  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	MAX.	AVG.
	(kph)	IBT	IBT	IBT	IBT	(meter)	(meter)	FORCE	FORCE	DECEL	DECEL
		(°C)	(°C)	(°C)	(°C)			(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	142.22	71	69	50	47	105.3	104.2	485.46	387.61	12.43	7.36
2	140.40	85	86	65	53	101.8	103.4	471.36	393.51	12.11	7.37
3	139.69	69	73	55	48	97.5	100.0	484.14	393.78	11.91	7.36
4	139.94	77	75	51	51	97.5	99.7	489.25	421.21	12.64	7.62
5	140.64	87	86	58	55	98.8	100.1	512.12	404.85	13.29	7.51
6	141.15	82	89	58	57	96.3	96.8	469.86	388.31	11.51	7.37

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/01/04

### DATA SHEET 13 - STOPS WITH ENGINE OFF AT GVWR

Testing Conditions: INV DATA, Section 0025, 10/01/04, 13:56:01

Weather Conditions: 71°F Wind: 11 mph 192° Start Odo.: 386 End Odo.: 390

Schedule:

Initial Brake Temperature: 65-100°C  
Initial Speed 100 km/h to zero  
6 stops with transmission in neutral

Performance Requirements:

One Stop with:  
Stopping Distance less than 70m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	MAX.	AVG.
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	100.29	80	84	55	53	51.9	51.6	458.30	333.51	11.14	6.36
2	100.90	91	95	64	60	50.5	49.6	451.79	366.48	10.68	7.05
3	99.54	93	91	61	58	52.6	53.1	450.87	371.64	10.36	6.92
4	99.19	86	89	58	56	51.9	52.7	480.56	359.11	10.52	6.39
5	98.83	93	97	62	58	51.1	52.3	492.27	388.98	11.09	7.10
6	99.50	84	86	58	54	49.8	50.3	505.30	390.24	13.55	7.37

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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## DATA SHEET 14 - COLD EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0030, 10/06/04, 09:40:08

Weather Conditions: 53°F Wind: 7 mph 209° Start Odo.: 401 End Odo.: 406

### Schedule:

Initial Brake Temperature: 65-100°C  
 Initial Speed 100 km/h to zero  
 6 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
 Stopping Distance less than 70m  
 Pedal force between 65N and 500N  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h  
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
	(kph)	IBT	IBT	IBT	IBT	(meter)	(SAE 299)	FORCE	FORCE	DECEL	DECEL
		(°C)	(°C)	(°C)	(°C)		(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	99.27	76	77	41	41	48.4	49.1	486.43	406.26	11.85	7.46
2	100.41	90	90	41	41	48.9	48.5	494.26	368.04	12.42	7.20
3	99.67	96	93	41	41	47.1	47.4	504.72	383.17	12.75	7.11
4	99.84	93	88	39	38	47.5	47.7	479.65	355.62	12.18	6.70
5	99.23	89	88	39	38	48.2	48.9	485.91	373.51	14.61	7.01
6	99.50	88	87	38	37	48.4	48.9	507.20	377.36	11.92	6.96

STOP DRIVER VEHICLE STOP COMMENTS  
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	- NOX SOUTH YES
2	- NOX SOUTH YES
3	- NOX SOUTH YES
4	- NOX SOUTH YES
5	- NOX SOUTH YES
6	- NOX SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

NHTSA NUMBER: C50100

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## DATA SHEET 15 - HIGH SPEED EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0035, 10/06/04, 10:17:07

Weather Conditions: 57°F Wind: 10 mph 230°

Start Odo.: 406

End Odo.: 413

### Schedule:

Initial Brake Temperature: 65-100°C  
Initial Speed: 80% max km/h  
6 stops with transmission in gear

### Performance Requirements:

One Stop with:  
Stopping Distance less than 148.3m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(SAE 299)	FORCE	FORCE	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	139.65	79	75	36	34	89.8	92.2	464.82	390.88	15.59	8.37
2	141.67	80	76	34	32	88.2	88.0	486.49	389.07	13.22	7.89
3	140.59	76	67	31	28	89.6	90.8	491.91	395.89	13.92	8.32
4	140.67	73	66	33	32	88.0	89.1	483.77	384.46	13.85	7.88
5	140.78	89	80	39	36	88.9	89.8	496.13	401.92	14.36	8.44
6	140.55	81	67	33	31	86.9	88.1	503.19	410.97	15.56	8.43

### STOP DRIVER VEHICLE STOP COMMENTS

(Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP	1	2	3	4	5	6
#	-	-	-	-	-	-
1	-	NOX	SOUTH	YES		
2	-	NOX	SOUTH	YES		
3	-	NOX	SOUTH	YES		
4	-	NOX	SOUTH	YES		
5	-	NOX	SOUTH	YES		
6	-	NOX	SOUTH	YES		

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/04/04

Approving Laboratory Official: KEN WEBSTER

Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

NHTSA NUMBER: C50100

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## DATA SHEET 16 - ANTILOCK FUNCTIONAL FAILURE AT LLVW

Testing Conditions: INV DATA, Section 0040, 10/06/04, 11:36:51

Weather Conditions: 59°F Wind: 8 mph 280° Start Odo.: 415 End Odo.: 420

### Schedule:

Initial Brake Temperature: 65-100°C  
Initial Speed 100 km/h to zero  
6 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
Stopping Distance less than 85m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec <sup>2</sup> )	AVG. DECEL (m/sec <sup>2</sup> )
1	99.84	94	91	47	45	59.0	58.2	148.39	117.24	9.70	6.42
2	100.50	91	90	50	50	64.1	63.4	208.51	109.38	9.46	6.05
3	99.86	93	89	52	53	61.7	61.9	208.94	114.06	9.12	6.40
4	100.03	93	93	56	58	59.7	59.7	163.44	115.52	9.06	6.20
5	99.25	96	96	58	61	63.8	64.8	150.11	102.86	8.77	5.95
6	100.05	96	96	57	62	61.1	61.1	281.90	112.22	9.29	6.20

### STOP # DRIVER VEHICLE STOP COMMENTS (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	RRX-BND SOUTH YES
2	NOX SOUTH YES
3	RRX-BND SOUTH YES
4	NOX SOUTH YES
5	NOX SOUTH YES
6	NOX SOUTH YES

How was the ABS failure induced: REMOVED 20 AMP FUSE FROM POWER BOX UNDER HOOD ON LEFT SIDE.

Is brake system indicator lamp activated: YES (X) NO ( )

Vehicle not equipped with variable proportioning valve. Data Sheet 17 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04



Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

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## DATA SHEET 18 - HYDRAULIC CIRCUIT FAILURE #1 AT LLVW

Testing Conditions: INV DATA, Section 0050, 10/06/04, 14:36:53

Weather Conditions: 67°F Wind: 2 mph 335° Start Odo.: 423 End Odo.: 426

Method of simulating failure: Disconnected Brake Line @ M/C Front Port

System Portion Failed: LF & RR

### Schedule:

Initial Brake Temperature: 65-100°C  
Initial Speed 100 km/h to zero  
4 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
Stopping Distance less than 168m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	99.49	29	95	52	22	94.8	95.8	466.56	388.03	9.93	3.94
2	99.53	29	94	54	25	97.4	98.3	466.62	381.55	6.67	3.86
3	99.15	27	81	47	29	91.5	93.1	484.32	391.28	9.45	3.99
4	99.91	31	95	57	29	96.7	96.9	481.94	418.70	6.91	3.75

STOP DRIVER VEHICLE STOP COMMENTS  
# (Wheel Lock-Up - Direction of Stop - Stay in Lane)

1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Force Needed to Activate Brake Failure Lamp (N): N/A  
Fluid Removed (mL) to Activate Brake Failure Lamp: 148

Is brake system indicator lamp activated: YES (X) NO ( )

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/07/04

## DATA SHEET 19 - HYDRAULIC CIRCUIT FAILURE #2 AT LLVW

Testing Conditions: INV DATA, Section 0055, 10/07/04, 08:34:11

Weather Conditions: 48°F Wind: 3 mph 145° Start Odo.: 434 End Odo.: 437

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: RF & LR

### Schedule:

Initial Brake Temperature 65-100°C  
 Initial Speed 100 km/h to zero  
 4 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
 Stopping Distance less than **168m**  
 Pedal force between 65N and 500N  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h  
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	99.41	89	18	15	52	90.4	91.5	479.60	400.57	7.95	4.08
2	100.51	92	18	15	49	90.9	90.0	470.95	379.78	9.04	3.82
3	99.45	92	18	16	50	90.7	91.7	474.96	405.12	8.60	3.97
4	100.14	93	20	16	48	90.7	90.5	492.01	396.72	9.01	3.91

STOP DRIVER VEHICLE STOP COMMENTS  
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	- NOX SOUTH YES
2	- NOX SOUTH YES
3	- NOX SOUTH YES
4	- NOX SOUTH YES

Force Needed to Activate Brake Failure Lamp (N): N/A  
 Fluid Removed (mL) to Activate Brake Failure Lamp: 148

Is brake system indicator lamp activated: YES (X) NO ( )

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/07/04

## DATA SHEET 20 - HYDRAULIC CIRCUIT FAILURE #1 AT GVWR

Testing Conditions: INV DATA, Section 0060, 10/07/04, 12:58:28

Weather Conditions: 68°F Wind: 10 mph 147° Start Odo.: 448 End Odo.: 452

Method of simulating failure: Disconnected Brake Line @ M/C Front Port

System Portion Failed: LF & RR

### Schedule:

Initial Brake Temperature 65-100°C  
 Initial Speed 100 km/h to zero  
 6 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
 Stopping Distance less than 168m  
 Pedal force between 65N and 500N  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h  
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	99.86	30	91	59	24	98.5	98.8	487.09	411.75	6.17	3.78
2	100.10	27	86	59	26	98.3	98.2	472.12	406.37	7.77	3.86
3	99.20	28	72	57	27	93.7	95.2	484.10	413.89	9.58	4.11
4	100.06	29	94	66	27	97.2	97.1	479.97	401.12	8.43	3.77

STOP # DRIVER VEHICLE STOP COMMENTS  
 (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	WHEEL LOCK-UP	DIRECTION OF STOP	STAY IN LANE
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES

Is brake system indicator lamp activated: YES (X) NO ( )

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

NHTSA NUMBER: C50100

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## DATA SHEET 21 - HYDRAULIC CIRCUIT FAILURE #2 AT GVWR

Testing Conditions: INV DATA, Section 0065, 10/07/04, 10:25:45

Weather Conditions: 60°F Wind: 11 mph 152° Start Odo.: 442 End Odo.: 445

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: RF & LR

### Schedule:

Initial Brake Temperature 65-100°C  
Initial Speed 100 km/h to zero  
4 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
Stopping Distance less than 168m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAB 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	99.49	78	22	21	57	98.6	99.6	490.85	411.57	6.93	3.62
2	100.06	84	23	22	67	95.8	95.7	482.05	400.05	7.30	3.76
3	99.93	86	23	23	72	94.6	94.8	474.74	399.37	9.50	3.73
4	99.56	84	24	24	69	96.8	97.7	494.37	410.90	7.44	3.58

STOP DRIVER VEHICLE STOP COMMENTS  
# (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	NOX SOUTH YES
2	NOX SOUTH YES
3	NOX SOUTH YES
4	NOX SOUTH YES

Is brake system indicator lamp activated: YES (X) NO ( )

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

NHTSA NUMBER: C50100

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Date Tested: 10/07/04

## DATA SHEET 22 - ANTILOCK FUNCTIONAL FAILURE AT GVWR

Testing Conditions: INV DATA, Section 0070, 10/07/04, 14:42:05

Weather Conditions: 70°F Wind: 13 mph 113°

Start Odo.: 454

End Odo.: 459

### Schedule:

Initial Brake Temperature 65-100°C  
Initial Speed 100 km/h to zero  
6 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
Stopping Distance less than 85m  
Pedal force between 65N and 500N  
No Lock-Up allowed longer than 0.1 sec above 15 km/h  
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT		CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	ACTUAL	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
	(kph)	(°C)	(°C)	(°C)	(°C)	DISTANCE	(SAE 299)	FORCE	FORCE	DECEL	DECEL
						(meter)	(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	100.75	64	75	54	49	58.3	57.4	335.50	160.61	9.78	6.45
2	99.86	84	86	69	66	60.9	61.0	174.21	131.85	9.21	6.02
3	100.43	83	90	65	67	55.5	55.0	266.58	149.98	9.89	6.30
4	99.33	88	94	69	72	55.1	55.8	249.80	154.28	10.00	6.66
5	99.98	79	84	64	63	57.6	57.6	293.29	145.33	9.03	6.43
6	98.90	75	80	63	65	56.8	58.0	223.57	150.01	9.64	6.45

STOP DRIVER VEHICLE STOP COMMENTS  
# (Wheel Lock-Up - Direction of Stop - Stay in Lane)

1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

How was the ABS failure induced: REMOVED 20 AMP FUSE FROM POWER BOX UNDER HOOD ON LEFT SIDE.

Is brake system indicator lamp activated: YES (X) NO ( )

Vehicle not equipped with variable proportioning valve. Data Sheet 23 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/08/04

## DATA SHEET 24 - BRAKE POWER UNIT OR PWR ASSIST UNIT IN/OP AT GVWR

Testing Conditions: INV DATA, Section 0080, 10/08/04, 08:43:49

Weather Conditions: 50°F Wind: 8 mph 165° Start Odo.: 466 End Odo.: 472

Failure Simulation: Disconnect primary source of power.

Method of rendering inoperative: Removed Engine Vacuum Hose at Booster

### Schedule:

Initial Brake Temperature 65-100°C  
 Initial Speed 100 km/h to zero  
 6 stops with transmission in neutral

### Performance Requirements:

One Stop with:  
 Stopping Distance less than 168m  
 Pedal force between 65N and 500N  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h  
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec <sup>2</sup> )	(m/sec <sup>2</sup> )
1	99.15	87	83	43	43	141.5	143.9	497.77	477.92	4.16	2.84
2	99.10	91	88	46	49	139.8	142.3	504.92	474.62	4.08	2.89
3	100.09	75	78	40	43	145.7	145.4	494.16	462.08	4.29	2.81
4	99.98	83	79	44	45	140.4	140.5	494.26	466.70	4.30	2.87
5	100.30	94	96	48	50	137.4	136.5	497.44	471.74	4.37	2.94
6	100.76	89	93	47	51	136.1	134.1	494.32	470.43	4.74	2.96

STOP DRIVER VEHICLE STOP COMMENTS  
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	- NOX SOUTH YES
2	- NOX SOUTH YES
3	- NOX SOUTH YES
4	- NOX SOUTH YES
5	- NOX SOUTH YES
6	- NOX SOUTH YES

Is the brake system indicator lamp activated: YES ( ) NO (X)

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/08/04

## DATA SHEET 25 - PARKING BRAKE AT GVWR

Testing Conditions: INV DATA, Section 0085, 10/08/04, 10:23:25  
 Parking brake: AUTOMATIC TR Non-service type: N/A

Service type: HAND-OPERATED

Weather Conditions: 58°F Wind: 10 mph 154° Start Odo.: 474 End Odo.: 474

Test Weight: Total: 2299kg Front: 1149kg Rear: 1150kg

### Schedule:

Initial Brake Temperature <100°C or (Ambient temp.  
 if non-service brake type materials)  
 Loaded to GVWR with transmission in neutral  
 Drive onto 20% slope in forward and reverse directions.

### Performance Requirements:

Up to Three Applies in each direction:  
 Parking brake must hold the vehicle stationary  
 in both directions for 5 minutes each.  
 Pedal force: Hand control: <400 N  
 Foot control: <500 N

NOTE: For vehicles with parking brake systems not utilizing the  
 service brake friction elements, the friction elements of such systems  
 are to be burnished prior to parking brake tests according to the  
 manufacturer's published recommendation as furnished to the purchaser.  
 If no recommendations are furnished, test the system in an unburnished  
 condition. If recommendations are furnished, record method used.

	MAX SERVICE FORCE (N)	MAX P-BRAKE FORCE (N)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	AVG REAR IBT (°C)	DRIVER VEHICLE STOP COMMENTS (Direction of Stop (Up/Down) - Brake holds/fails)			
APPLY #									
1	126.2	379.9	24	24	24.2	-	0 REAPPLY	UPHILL	HOLDS 20%
2	81.3	371.2	26	27	26.4	-	0 REAPPLY	DOWNHILL	HOLDS 20%

Is brake system indicator lamp activated: YES (X) NO ( )

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
Make: CHEVROLET  
Model: EQUINOX FWD LT  
Body Style: 4DR, LB, MPV  
Front Cold Tire Pressure: 207 (Kpa)  
Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/08/04

## DATA SHEET 26 - HEATING SNUBS AT GVWR

Testing Conditions: INV DATA, Section 0090, 10/08/04, 10:41:33

### Schedule:

Conduct 15 snubs from 120 Km/h or 80% Vmax, whichever is slower, to 1/2 of initial speed.  
Attain required decel in 1 second and maintain that decel.  
Interval between snubs is 45 seconds and WOT to initial speed.

### Performance Requirements:

Initial IBT for first snub is 55-65°C  
Maintain 3.0 m/s/s deceleration  
Vehicle Must stay in lane of 3.5m

SNUB	AVG. DECEL	Time Between Snubs	AVG. PEDAL FORCE	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	INIT SPD
#	(m/sec <sup>2</sup> )	(second)	(N)	(°C)	(°C)	(°C)	(°C)	(kph)
1	2.90	--NA--	64.29	61	52	38	39	120.25
2	3.03	62	54.50	107	102	59	61	119.50
3	2.71	52	50.83	147	149	74	78	120.55
4	2.80	45	52.79	177	194	88	96	119.05
5	2.80	45	58.14	211	223	99	109	119.82
6	2.42	45	53.07	229	244	109	122	120.33
7	2.69	45	62.15	246	258	117	133	119.80
8	2.89	44	64.32	253	275	126	144	120.80
9	2.65	45	61.72	271	290	134	154	120.79
10	2.88	46	64.01	285	302	142	163	119.12
11	2.86	45	63.77	296	311	150	171	119.23
12	2.71	45	60.07	301	332	156	179	120.25
13	2.92	44	60.93	305	336	161	182	120.35
14	3.17	45	65.51	297	334	163	185	119.19
15	2.62	46	52.97	292	333	166	188	120.71

STOP DRIVER VEHICLE SNUB COMMENTS  
# (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	Wheel Lock-Up	Direction of Stop	Stay in Lane
1	-	NOX	NORTH YES
2	-	NOX	EAST YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	WEST YES
7	-	NOX	WEST YES
8	-	NOX	NORTH YES
9	-	NOX	NORTH YES
10	-	NOX	NORTH YES
11	-	NOX	EAST YES
12	-	NOX	SOUTH YES
13	-	NOX	SOUTH YES
14	-	NOX	SOUTH NOX
15	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
Approving Laboratory Official: KEN WEBSTER Date: 11/10/04



Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/08/04

## DATA SHEET 27 - HOT PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0095, 10/08/04, 10:52:50

### Schedule:

Make 2 stops from 100 kph  
 Pedal Force: 1st stop is done with an average force less than the average recorded in the shortest GVWR Cold Effectiveness stop.  
 2nd stop is done with a force less than 500 N.  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h.  
Distance Requirements are based on the following:  
 shortest stop in Data Sheet 11 is: 1 /  
 Initial speed of stop: 100.41 (kph)  
 Actual distance of stop: 51.9 (meter).  
 Average pedal force: 370.5 (N)

### Performance Requirements:

Stop Number 1 must be less than: 79.8 (meter)  
 In addition the stopping distance for at least one of the of the two hot stops must be less than: 89 (meter)

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec <sup>2</sup> )	AVG. DECEL (m/sec <sup>2</sup> )
1	99.50	303	343	173	198	52.0	52.5	411.19	318.61	11.83	6.93
2	100.34	312	354	182	206	52.0	51.7	426.48	355.58	11.53	7.00

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	WEST	YES
2	-	NOX	WEST	YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/08/04

## DATA SHEET 28 - BRAKE COOLING STOPS AT GVWR

Testing Conditions: INV DATA, Section 0100, 10/08/04, 10:55:50

### Schedule:

Initial Brake Temperature:  
 Achieved on completing Hot Performance  
 Initial Speed 50 km/h to zero  
 4 stops with transmission in gear

### Performance Requirements:

Constant Decel rate: 3.0 m/s/s  
 Pedal force adjusted as necessary  
 No Lock-Up allowed longer than 0.1 sec above 15 km/h  
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	AVG. DECEL (m/sec <sup>2</sup> )	AVG. PEDAL FORCE (N)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)
1	50.09	2.73	54.78	266	316	164	186
2	49.44	2.53	57.38	220	263	143	168
3	50.29	2.87	59.52	189	219	127	149
4	49.30	2.75	53.03	164	186	113	134

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)		
1	-	NOX	NORTH YES
2	-	NOX	NORTH YES
3	-	NOX	NORTH YES
4	-	NOX	EAST YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

Vehicle: 2005 GENERAL MOTORS NHTSA NUMBER: C50100  
 Make: CHEVROLET  
 Model: EQUINOX FWD LT  
 Body Style: 4DR, LB, MPV  
 Front Cold Tire Pressure: 207 (Kpa)  
 Rear Cold Tire Pressure: 207 (Kpa)

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Date Tested: 10/08/04

## DATA SHEET 29 - RECOVERY PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0105, 10/08/04, 11:02:56

Weather Conditions: 63°F Wind: 11 mph 161° Start Odo.: 475 End Odo.: 492

Schedule:

Make 2 stops from 100 kph

Pedal Force: Both stops are performed with an average force less than the average recorded in the shortest GVWR Cold Effectiveness stop.

Performance Requirements:

One of the two stops must be within the following limits:

Upper limit of corrected stopping distance: 69.8 (meter)

Lower limit of corrected stopping distance: 37.9 (meter)

No Lock-Up allowed longer than 0.1 sec above 15 km/h.

Distance Requirements are based on the following:

Shortest stop Data Sheet 11 is: Stop 1

Initial speed of stop: 100.41 (kph)

Actual distance of stop: 51.9 (meter)

Average pedal force: 370.5 (N)

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec <sup>2</sup> )	AVG. DECEL (m/sec <sup>2</sup> )
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)						
1	98.85	148	171	107	127	45.2	46.3	394.76	292.21	13.00	7.85
2	99.56	176	195	124	147	50.4	50.8	438.01	315.15	13.88	7.07

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ( )

Driver: KAREN EASTERDAY Observer: NONE  
 Recorded Data Processed by: CHUCK JENKINS Date: 11/04/04  
 Approving Laboratory Official: KEN WEBSTER Date: 11/10/04

**DATA SHEET 30 (Part 1 of 5)**  
**6.0 Test Completion Inspection (7.17)**

VEHICLE: 2005 Chevrolet Equinox FWD LT NHTSA NO.: C50100 DATE: 10/13/04

**System Integrity (S5.6)**

Each vehicle shall meet the complete performance requirements of this standard without:

- (a) Detachment or fracture of any component of the braking system such as brake springs and brake shoes or disc pad facings, other than minor cracks, that do not impair attachment of the friction facings. All mechanical components of the braking system shall be intact and functional. Friction facing tearout (complete detachment of lining) shall not exceed 10 percent of the lining on any single frictional element.
- (b) Any visible brake fluid or lubricant on the friction surface of the brake or leakage at the master cylinder or brake power unit reservoir cover, seal, and filler openings.

Friction Material Condition: Primary/Inner		Friction Material Condition: Secondary/Outer	
LF	Normal Appearance & Color	LF	Normal Appearance & Color
RF	Normal Appearance & Color	RF	Normal Appearance & Color
LR	Normal Appearance & Color	LF	Normal Appearance & Color
RR	Normal Appearance & Color	RR	Normal Appearance & Color
Drum (or Rotor) Condition:		Brake Fluid/Lubricant Inside Brakes:	
LF	Normal Appearance & Color	LF	None
RF	Normal Appearance & Color	RF	None
LR	Normal Appearance & Color	LR	None
RR	Normal Appearance & Color	RR	None
Hydraulic Component Condition:		Mechanical Component Condition:	
LF	Good	Brk/Pedal	Good
RF	Good	Power Brk	Good
LR	Good	Stop/Lamp	Good
RR	Good	Linkage	Good
M/Cyl	Good	Other	NA

COMPLIANCE: Yes X No     

Comments: None.

Technician: K. Easterday

**DATA SHEET 30 (Part 2 of 5)**  
**TEST COMPLETION INSPECTION (S7.17)**

VEHICLE: 2005 Chevrolet Equinox FWD LT; NHTSA NO.: C50100; GVWR: 2300 kg  
**MASTER CYLINDER RESERVOIR:**

DATE	10/12/04	Requirements	Pass	Fail
<b>Reservoir Compartments (S5.4.1)</b>				
(1) Does master cylinder have a reservoir compartment for each brake subsystem?	<u>Yes</u>	Master cylinder shall have a reservoir compartment for each subsystem.	X	
	No			
(2) Does loss of fluid in one compartment result in complete loss from another compartment?	Yes	Loss of fluid from one compartment shall not cause complete loss from another compartment.	X	
	<u>No</u>			
<b>Reservoir Capacity (S5.4.2)</b>				
Shall conform to requirements (1) or (2), state units:				
(1) For reservoirs having completely separate compartments for each subsystem (two separate, independent reservoirs):				
Subsystem 1 Subsystem reservoir capacity		Each compartment (reservoir) shall have a minimum capacity equivalent to the fluid displacement resulting when all wheel cylinders or caliper pistons serviced by that independent compartment/reservoir moves from a new lining, fully retracted position to a fully worn, properly adjusted, fully applied position.  (Use Data Sheet 31 and Appendix 1A)	NA	NA
Subsystem 1 Fluid displaced from new to worn lining				
Subsystem 2 Subsystem reservoir capacity			NA	NA
Subsystem 2 Fluid displaced from new to worn lining				
2) For reservoirs utilizing a portion of the reservoir for a common supply to two or more subsystems:				
Total minimum capacity for the entire master cylinder reservoir (includes individual compartment reservoirs)	312 ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper positions moving from new lining to full worn condition as above.	X	
Fluid displaced from new to worn linings (ALL linings)	130.9 ml*			
*Value calculated from Data Sheet 31				

Comments: None

# DATA SHEET 30 (Part 3 of 5)

## TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2005 Chevrolet Equinox FWD LT; NHTSA NO.: C50100; GVWR: 2300 kg

### MASTER CYLINDER RESERVOIR:

DATE	10/12/04	Requirements	Pass	Fail
Master Cylinder Piston Displacement(S5.4.2) [If Common Reservoir Supply - continued from previous page]				
Fluid displaced by three strokes of master cylinder piston for Primary (Subsystem No. 1)	25.0 ml	Individual partial compartments of reservoir shall <b>each</b> have a minimum of fluid equal to at least the volume displaced by the master cylinder piston servicing the subsystem during a <u>full stroke</u> of the piston.  <b>NOTE:</b> Procedure uses three strokes to ensure an accurate measurement.		
Fluid displaced by three strokes of master cylinder piston for Secondary (Subsystem No. 2)	24.5 ml			
Fluid displaced per stroke, Primary	8.3 ml			
Fluid displaced per stroke, Secondary	8.2 ml			
Fluid available in partial compartment Subsystem No. 1	63.0 ml		X	
Fluid available in partial compartment Subsystem No. 2	42.0 ml		X	
<b>Brake Power Unit Reservoir (S5.4.2)</b>				
Volume displaced in charging system piston or accumulator to normal operating pressure plus wheel cylinder or caliper piston displacement.		Shall have a capacity at least equal to fluid displacement required to charge the system pistons on accumulators to normal operating pressure <u>plus</u> displacement when wheel cylinders or caliper pistons move from new lining to full worn condition as above.	NA	
<b>Reservoir Labeling (S5.4.3)</b>				
Exact copy of reservoir label: On master cylinder reservoir cap and top of reservoir: <u>WARNING.</u> <u>CLEAN FILLER CAP BEFORE REMOVING.</u> On top of reservoir: <u>USE ONLY DOT 3 BRAKE FLUID FROM A SEALED CONTAINER.</u>		Label shall read: "Warning, clean filler cap before removing; use only * fluid from a sealed container". * Fluid type specified in 49 CFR 571.116	X	
Measure letter height	3.2 mm	Letters shall be at least 3.2 mm/ 0.125" high	X	
Describe label attachment method and location. <u>Embossed on the top of the master cylinder reservoir cap.</u>		Lettering shall be permanently affixed, engraved or embossed and located so as to be visible by direct view either on or within 100 mm/3.94 inches of the brake fluid reservoir filler plug or cap.	X	
Does the lettering contrast with the background?	<u>Yes</u>	If label is not engraved or embossed, letters shall be of a color that contrasts with the background	NA	
	<u>No</u>			

Comments: None

Technician: K. Easterday

**DATA SHEET 30 (Part 4 of 5)**  
**TEST COMPLETION INSPECTION (S7.18)**

VEHICLE: 2005 Chevrolet Equinox FWD LT; NHTSA NO.: C50100; DATE: 10/12/04  
**BRAKE SYSTEM WARNING INDICATOR (S5.5)**

CONDITION	ANSWER	REQUIREMENTS	PASS	FAIL
<b>Brake Systems Indicator Lamp Function Check (S5.5.2) (Bulb and systems check)</b>				
Describe location of brake indicator lamp: <u>In upper right quadrant of instrument cluster.</u>	NA	Shall be in front, and in clear view, of driver.	X	
Does lamp light with ignition (start) switch at ON/RUN?	Yes	Automatic activation when ignition switch is "on" when engine <b>not running</b> , or ignition between "on" and "start" if is manufacturer check position- OR -single manual action by driver	X	
Does lamp light with ignition between ON and Start?	Yes			
Brake check description in owner's manual?	Yes	Manufacturer shall explain the brake check function test procedure in the owner's manual.	X	
<b>Brake System Warning Indicator ACTIVATION (S5.5.1) DURATION (S5.5.3) FUNCTION (S5.5.4)</b>				
CONDITION	Light ON?	REQUIREMENT	PASS	FAIL
A. In event of hydraulic leak (1) On or before appearance of pressure differential of 218 psi (split system)	NA	When ignition (Start) switch is <b>ON</b> , lamp must light whenever (A), (B), (C), or (D) occurs. In addition, if service brake system is not a split system, audible warning must be activated when any condition in (A) exists. Visual warning indicator for non-split systems must be flashing.	X	
(2) If any reservoir falls below either "safe" level or 25% of capacity, whichever is greater.	Yes			
(3) On or before supply pressure to brake power unit falls to 50%	N/A			
B. Electrical functional failure in an antilock or variable brake proportioning system.	Yes		X	
C. Application of the parking brake.	Yes			
D. Brake lining wear-out if optical warning	NA			
<u>Must have Audible alarm if not split system</u> and a condition in (a) above exists?	NA			
If condition (A) (2) above does not exist, then fluid reservoir must be <b>transparent</b> for fluid check without the need for reservoir to be opened? (S5.4.4)	NA			
Indicator lamps remain activated as long as condition exists - ignition "on", and engine on or off? _____ (S5.5.3 DURATION))	Yes			
Visual warning – continuous or flashing?	Yes-Cont.			
Audible warning –continuous or flashing?	No			

Comments: None.

Technician: K. Easterday

**DATA SHEET 30 (Part 5 of 5)**  
**TEST COMPLETION INSPECTION (S7.18)**

VEHICLE: 2005 Chevrolet Equinox FWD LT; NHTSA NO.: C50100; DATE: 10/12/04

**BRAKE SYSTEM WARNING INDICATOR LABELING (S5.5.5)**

CONDITION AND REQUIREMENT	ANSWER NOTE: Standard requires that the answer to questions be YES	PASS	FAIL
Are visual indicators legible to driver in daylight and nighttime conditions when activated?	Yes	X	
Are visual indicator words 3.2 mm (.125") high minimum? Record Height: "Brake" - <u>3.2 mm</u> ; "ABS" - <u>3.2 mm</u> .	Yes	X	
Visual indicator words and background contrasting colors, one of which is red. Record colors <u>Letters - Red, Lens - Black</u>	Yes	X	
If split system, is there one brake indicator? If yes, does it say the word "Brake"?	Yes	X	
If not split system; is there a separate indicator for loss of fluid or fluid pressure? Does this indicator say "Stop-Brake Failure"? Are the letters block and not less than 6.4 mm (.25") in height? Record letter height _____	NA		
If separate indicator for: 1. Low brake fluid per S5.5.1(a)(1), does indicator say "Brake Fluid"? NOTE: not required for mineral oil system Record wording _____ 2. Gross pressure loss per S5.5.1(a)(2), does indicator say "Brake Pressure"? Record wording _____ 3. Electrical functional failure in antilock or variable proportioning system per S5.5.1(b), letters and background contrasting colors one of which is yellow? Record colors <u>Lens - Black, Letters - Amber or yellow</u> Does indicator say "Antilock" or "ABS" or "Brake Proportioning"? Record wording <u>"ABS" within symbol.</u> 4. Parking brake per S5.5.1(c), does indicator say "Park" or "Parking Brake"? Record wording _____ 5. Brake lining wear-out per S5.5.1(d), does indicator say "Brake Wear"? Record wording <u>NA</u> 6. For any other function? If yes, Record <u>NA</u>	NA  NA  Yes  Yes  NA  NA  NA	X	

Comments: None.

Technician: K. Easterday



**DATA SHEET 31 (Part 1 of 2)**  
**CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS**  
VEHICLE: 2005 Chevrolet Equinox FWD LT; NHTSA NO.: C50100; DATE: 08/26/04

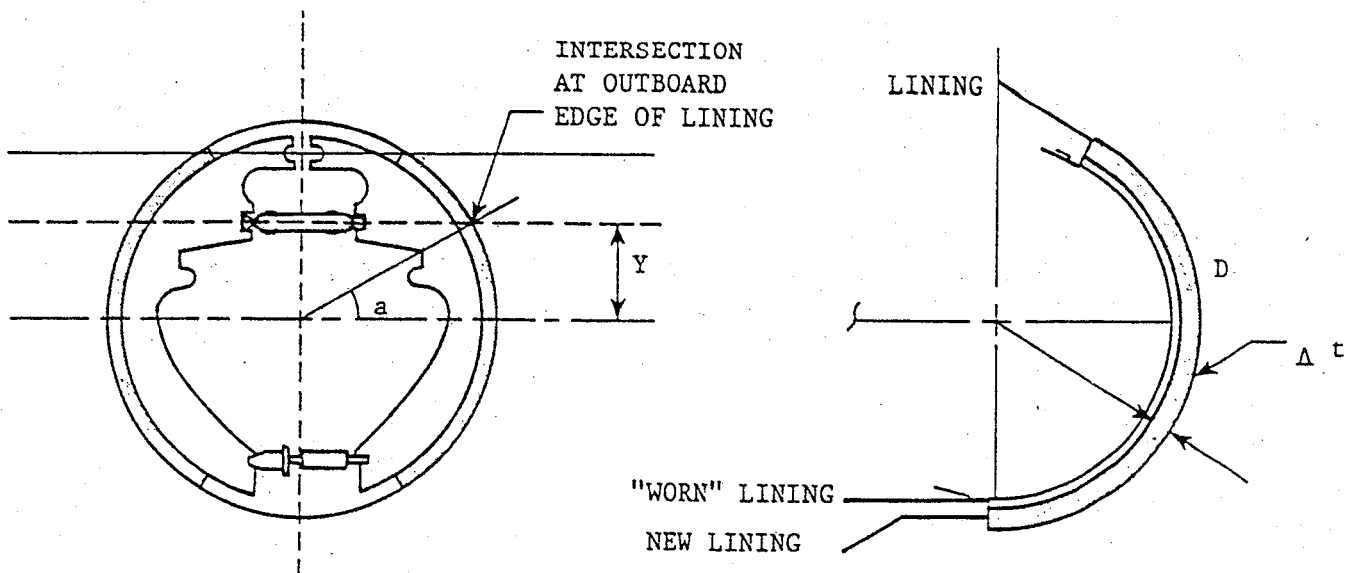
BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) mm*
Left Front	Drum	Leading	Pre-test 9.55 mm	0.78 mm
		Primary	Post Test 9.17 mm	
		Inboard X	Δ 0.38 mm	
	Disc X	Trailing	Pre-test 9.68 mm	0.78 mm
		Secondary	Post Test 9.40 mm	
		Outboard X	Δ 0.28 mm	
LINING CLEARANCE:	Diametrical (2): N/A	Inboard – 0.2 mm.	Outboard – 0.2 mm.	
WHEEL CYLINDER DIAMETER (3) N/A		CALIPER PISTON DIAMETER (3): 45.90 mm (x2 pistons)		
SHOE CAGE DIAMETER (4) <u>N/A</u> ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C. <u>N/A</u>				
Right Rear	Drum X	Leading X	Pre-test 9.65 mm	0.78 mm
		Primary	Post Test 9.55 mm	
		Inboard	Δ 0.10 mm	
	Disc	Trailing X	Pre-test 9.67 mm	0.78 mm
		Secondary	Post Test 9.17 mm	
		Outboard	Δ 0.50 mm	
LINING CLEARANCE:	Diametrical (2) 0.56 mm	Inboard – Not Appl.	Outboard – Not Appl.	
WHEEL CYLINDER DIAMETER (3): 22.28 mm		CALIPER PISTON DIAMETER (3): Not Appl.		
SHOE CAGE DIAMETER (4): 248.69 mm.		CENTER POINT OF BRAKE ASSY TO CENTER PT. OF W.C.: 95.25 mm.		
CIRCUIT #1 CONSISTS OF:	LF	LR – X	RF	RR – X
CIRCUIT #2 CONSISTS OF:	LF – X	LR	RF – X	RR
(1) MFRS. RECOMMENDATIONS – 0.78 mm, Front and Rear.				
(2) REAR - TOP OF RIVET HEADS – N/A.				
FRONT - 1/32 INCH – N/A. MFRS. DATA – N/A.				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE: 248.92 mm.				
(3) MFRS. DATA: Frt. – 46 mm, Rear - 22.23 mm.				
(4) RESET POSITION: 248.69 mm.				

Comments: Manufacturer's data: New lining thickness – Frt. = 9.62 mm, Rear = 6.01 mm.  
Technician: K. Easterday

## DATA SHEET 31 – SECTION CONTINUED (Part 2 of 2)

Vehicle: 2005 Chevrolet Equinox FWD LT; NHTSA No.: C50100; Date: 10/15/04

**Procedure and Example for Determining Master Cylinder Volume Requirement**  
The procedure followed for determining the minimum volume requirements is outlined in the example shown below. The required data is taken from the previous page. Both measured and manufacturer's provided data utilized to obtain the greatest amount of fluid volume.



**Drum Brake:** 
$$V_r = \frac{2C + \Delta t_l + t_t}{\cos a} A$$

Where:  $V_r$  = Volume required per wheel  
 $C$  = Manufacturer's recommend radial drum-to-lining clearance  
 $\Delta t_l$  = Change in thickness of Leading lining  
 $\Delta t_t$  = Change in thickness of Trailing lining  
 $Y$  = Center point of wheel cylinder to center point of brake

assembly

$A$  = Cross sectional area of the wheel cylinder bore  
 $NWC$  = Number of wheel cylinders serviced by the reservoir in

question

$a = \sin^{-1} \frac{2Y}{D}$

$D$  = Cage diameter  
 $d$  = Wheel cylinder diameter

Procedure and Calculations for Determining Master Cylinder Volume Requirement, (Contd')

Drum Brake:  $V_r = \frac{2C + \Delta t_i + \Delta t_o}{\cos a} A$

$$C = 0.56 \text{ mm} \quad a = \sin^{-1} \frac{2Y}{D} \quad Y = 95.25 \text{ mm} \quad A = \frac{\pi d^2}{4}$$

$$D = 248.69 \text{ mm}$$

$$\Delta t_p = 5.23 \text{ mm}$$

$$\Delta t_s = 5.23 \text{ mm} \quad \sin^{-1} \frac{2(95.25)}{248.69} = 49.997^\circ \quad A = \frac{\pi(22.28 \text{ mm})^2}{4} = 389.87 \text{ mm}^2$$

$$V_r = \frac{2(0.28) + 5.28 + 5.28}{\cos 49.162^\circ} (389.87) = 17.299 (389.87)$$

$$V_r = 6744.2 \text{ mm}^3 = 6.74 \text{ ml}$$

Disc Brake:  $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$

Where:  $V_r$  = Volume required per wheel  
 $\Delta t$  = Change in thickness (average)  
*i* = Inboard  
*o* = Outboard  
*d* = Caliper cylinder diameter  
*C* = Average radial drum-to-lining clearance

Disc Brake:  $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$

$$\Delta t_i = 8.84 \text{ mm}$$

$$\Delta t_o = 8.84 \text{ mm}$$

$$t_{ic} + t_{oc} = 0.4 \text{ mm}$$

$$d = 46 \text{ mm}$$

$$V_r = (8.84 + 0 + 8.84 + 0) \frac{\pi(46.0)^2}{4}$$

$$= 17.68 (1661.9)$$

$$= 29382.4 \text{ mm}^3 = 29.38 \text{ ml (X2 Pistons)} = 58.76 \text{ ml}$$

$$\text{Total Volume required } 2(58.76) + 2(6.74) = 130.9 \text{ ml}^* \quad \checkmark$$

## **SECTION 6.0**

### **Photographs**







MFD BY GENERAL MOTORS CORP.

05/04

GVWR  
2300KG(5070LB)

GAWR FRT  
1150KG(2535LB)

GAWR RR  
1150KG(2535LB)

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR  
VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON  
THE DATE OF MANUFACTURE SHOWN ABOVE.

**2CNDL63F456031337**

TYPE: M.P.V.

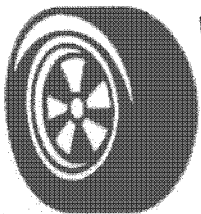
MODEL: LF26

FPAH	TIRE SIZE	SPEED RTG	RIM	COLD TIRE PRESSURE
FRT	P235/60R17	S	17X7J	210KPA(30PSI)
RR	P235/60R17	S	17X7J	210KPA(30PSI)
SPA	T155/90R16	M	16X4T	420KPA(60PSI)

SEE OWNER'S MANUAL  FOR MORE INFORMATION.

**2005 CHEVROLET  
EQUINOX LT  
NHTSA NO. C50100  
SEPTEMBER 2004**





## TIRE AND LOADING INFORMATION

SEATING CAPACITY | TOTAL 5 | FRONT 2 | CENTER 0 | REAR 3

The combined weight of occupants and cargo should never exceed 603 kg or 1330 lbs.

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE		SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
P235/60R17	FRONT	210 kPa, 30 PSI	
P235/60R17	REAR	210 kPa, 30 PSI	
T155/90R16	SPARE	420 kPa, 60 PSI	

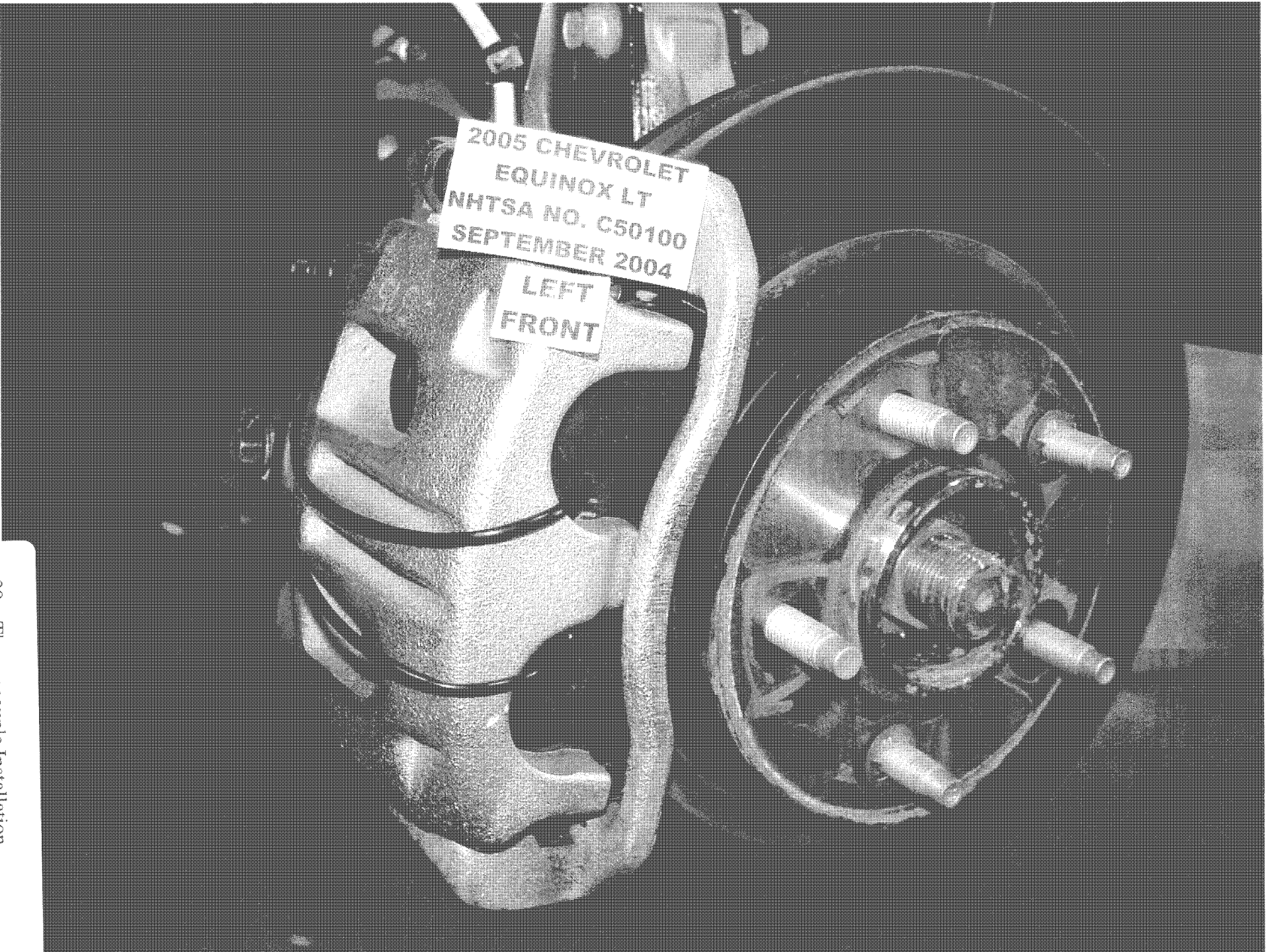
**2005 CHEVROLET**

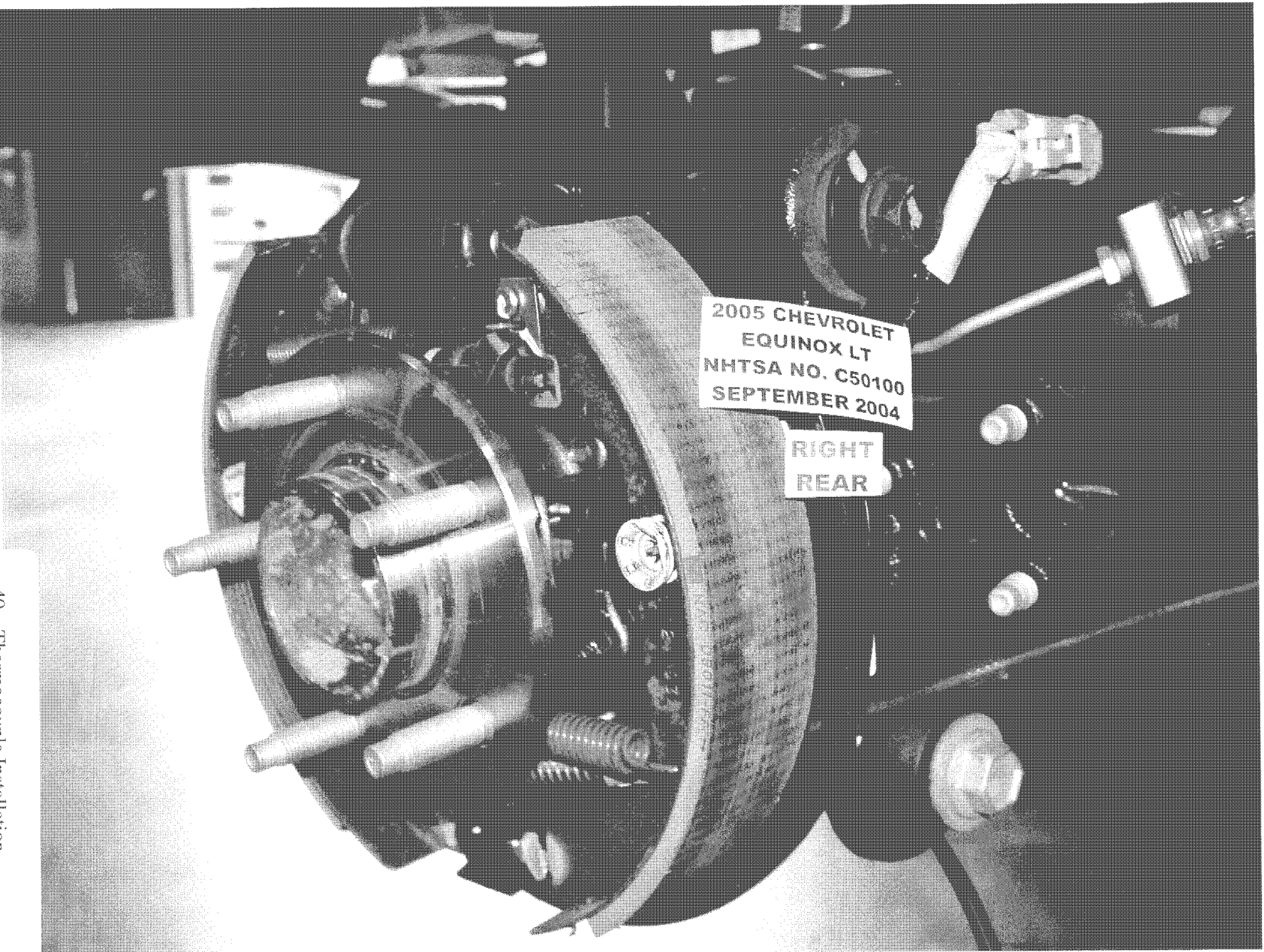
**EQUINOX LT**

**NHTSA NO. C50100**

**SEPTEMBER 2004**

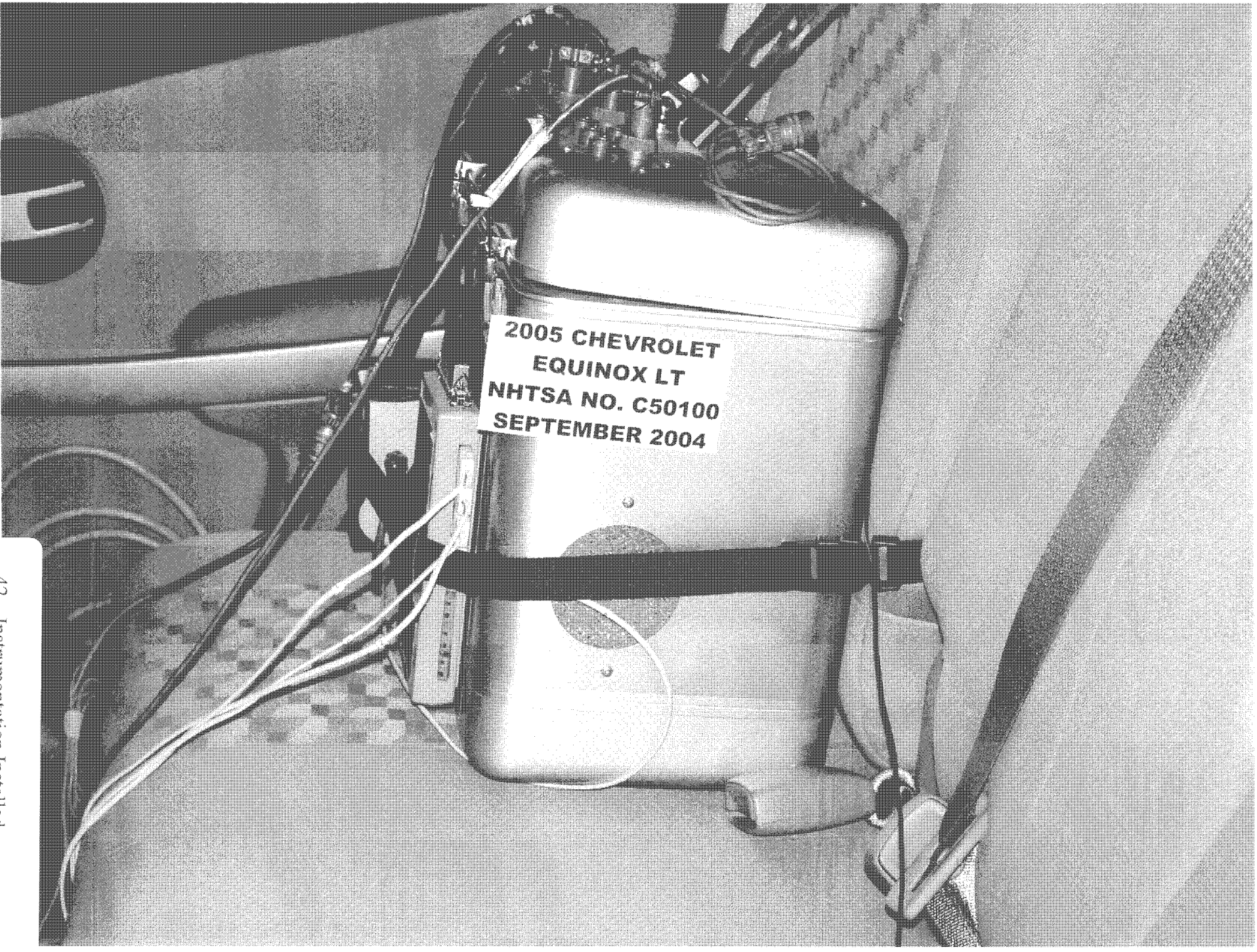







40 Thermocouple Installation  
Right Rear












2005 CHEVROLET  
EQUINOX LT  
NHTSA NO. C50100  
SEPTEMBER 2004



**2005 CHEVROLET  
EQUINOX LT  
NHTSA NO. C50100  
SEPTEMBER 2004**







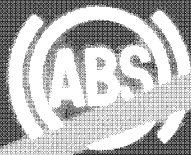











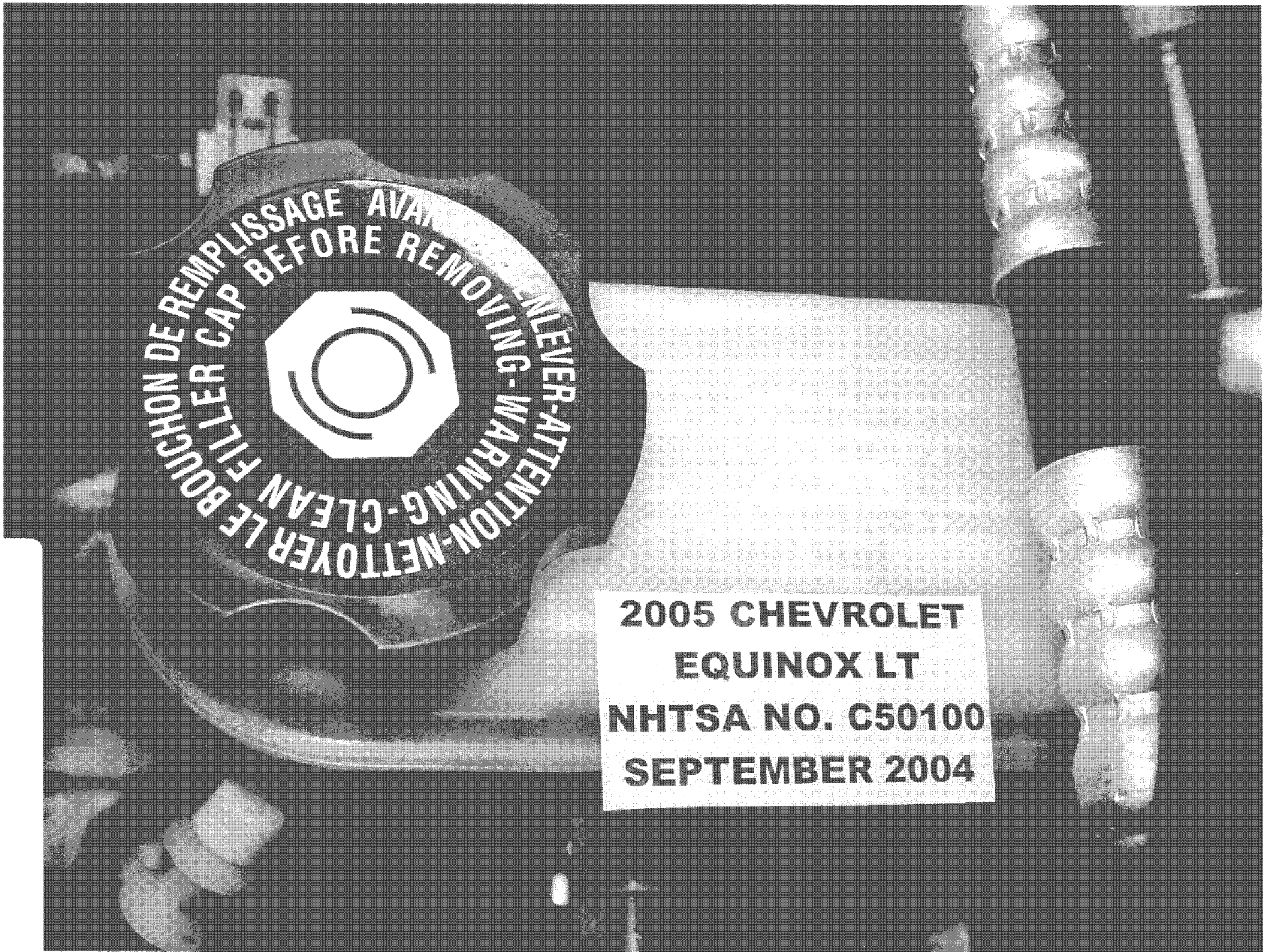


**2005 CHEVROLET  
EQUINOX LT  
NHTSA NO. C50100  
SEPTEMBER 2004**



**ⓘ BRAKE**

**2005 CHEVROLET  
EQUINOX LT  
NHTSA NO. C50100  
SEPTEMBER 2004**



**7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)**  
**VEHICLE: 2005 Chevrolet Equinox FWD LT; NHTSA NO.: C50100; DATE: 08/16/04**

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2030	975016	10/23/03	10/23/04
Computer – Dell Latitude/Link Engrg.	TRC-43207	Not Applicable	Not Applicable
Software - Link Engrg. Rev Data	TRC Propr.	NA	NA
LF Torque Wheel	Not Utilized		
RF Torque Wheel	Not Utilized		
LR Torque Wheel	Not Utilized		
RR Torque Wheel	Not Utilized		
Stopwatch – Accusplit	SW ST03	07/16/04	07/16/05
Tire Pressure Gauge – Ashcroft	AG-05	11/25/03	11/25/04
Voltage Multimeter – Dana 4300	M-108639	11/25/03	11/25/04
Pedal Force Transducer – Sensor Devel.	LC-169755	Each Test	Each Test
Asst. Pipe-Handle Steel Weights - Ohaus	LB-0002	06/22/04	06/22/05
Park Brake Force Transducer – Interface	41721	Each Test	Each Test
LF Hydraulic Pressure Transducer	Not Utilized		
RF Hydraulic Pressure Transducer	Not Utilized		
LR Hydraulic Pressure Transducer	Not Utilized		
RR Hydraulic Pressure Transducer	Not Utilized		
Accelerometer - Setra (+ or – 15 g) 141A	A-1055763	Each Test	Each Test
Fifth Wheel – ADAT DSR-06 Radar	140.0119	Each Test	Each Test
Wind Velocity/Direct. – Davis Model 6410	WXB308193A	09/15/03	09/15/04
Ambient Temp. Gage – Davis Model 6320	WXB308193A	09/15/03	09/15/04
LF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
LR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
Lock-up Detection System	TRC Propr.	Each Test	Each Test
Vehicle Weight – Toledo/Mettler Scales JAGXTREME 3000000, (Bldg. 70)	SN 5225831-5JC	08/06/04	11/06/04

QUALITY ASSURANCE



# DAILY CALIBRATIONS (1 of 3)

Vehicle: 2005 Chevrolet Equinox FWD LT

NHTSA No.: C50100

Deceleration Calibration Data for Unit 5352

Desired full scale value is: 9.81 m/s/s

Allowed deviation is: + or - 0.15 m/s/s

Accelerometer Level to zero, then tilt to full scale

"Date"	"Time"	Zero	Cal
"stp"	"stp"	"Decel"	"Decel"
9/29/2004	13:33:03	0.03	9.80
9/30/2004	9:19:17	-0.04	9.84
10/1/2004	10:38:09	0.02	9.81
10/1/2004	15:31:12	0.00	9.84
10/6/2004	9:28:43	-0.02	9.88
10/6/2004	15:17:33	0.13	9.85
10/7/2004	8:24:05	-0.02	9.80
10/7/2004	15:24:04	0.04	9.80
10/8/2004	8:21:15	-0.02	9.81
10/8/2004	11:11:24	-0.03	9.79
10/11/2004	13:18:45	-0.04	9.82

PRE-TEST CAL.

POST-TEST CAL.

Pre-Test Linearity Check 09/29/04

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Post-Test Linearity Check 10/08/04

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Distance Calibration Data for Unit 5352

Desired full scale value is: 1000 m

Allowed deviation is: 3 m

Light beam Drive from 0 to 100 to 0 km/h  
distance sensor on a measured kilometer

"Date"	"Time"	Distance for
"stp"	"stp"	1000 meters
9/29/2004	15:04:50	1000.4
9/30/2004	9:24:49	1000.5
10/1/2004	10:43:42	1000.6
10/1/2004	15:37:03	1000.1
10/6/2004	9:35:12	1001.3
10/6/2004	15:23:33	1000.1
10/7/2004	8:28:51	1001.8
10/7/2004	15:33:14	1000.0
10/8/2004	8:38:21	1001.6
10/8/2004	11:16:45	1000.9

PRE-TEST CAL.

POST-TEST CAL.

# DAILY CALIBRATIONS CONTINUED (2 of 3)

VEHICLE: 2005 Chevrolet Equinox FWD LT

NHTSA No.: C50100

## Wheel Tachometer Calibrations for Unit 5352

Wheel tachometer calibrations: all wheel speeds should be 15 km/h

Wheel tachometer calibrations: all wheel speeds checked to 15 km/h												
		"Date"	"Time"	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	
		stp	stp	LF	LF	RF	RF	LR	LR	RR	RR	
Wheel lock detector	While at a standstill, check zeros.	10/1/2004	10:46:22	0.0	15.9	-0.1	15.6	0.0	20.4	0.0	16.3	PRE-TEST CAL.
		10/1/2004	15:36:03	0.0	16.1	0.0	15.5	0.0	20.2	-0.1	16.2	
		10/6/2004	9:34:13	-0.1	16.1	0.0	15.6	-0.1	16.1	0.0	16.8	
		10/6/2004	15:18:50	-0.1	16.0	0.0	15.7	0.0	17.6	0.0	16.8	
	Drive vehicle at approx. 15 km/h and engage zero speed switch for each wheel	10/7/2004	8:27:34	0.0	16.3	0.0	15.7	-0.1	19.6	0.0	16.3	POST-TEST CAL.
		10/7/2004	15:29:30	-0.1	16.0	0.0	16.3	-0.1	25.8	-0.1	18.2	
		10/8/2004	8:26:33	0.0	16.5	0.0	16.2	0.0	19.0	0.0	18.6	
		10/8/2004	11:14:26	0.0	16.0	0.0	16.1	-0.1	21.1	0.0	19.0	

When driven over 15 km/hr and the wheel tach generators are shunted to zero volts, does the graphical screen indicate wheel lock at each wheel position?:  X  Yes,   No.

Note: The wheel tach calibrations did not occur until after the Burnish was complete.

## Pedal Force Meter Calibration for Unit 5352

Target shunt calibration is 391 N

Desired recorded value is: 391 N

Desired recorded calibration value is: 500 N

Allowed deviation is: 6.5 N

		Known deviation: 0.1				
		"Date"	"Time"	Zero	Cal Val	
		stp	stp	Force	Force lb	
Service brk. pedal effort	Driver engages a fixed shunt cal switch.	9/29/2004	13:47:42	-0.7	498.8	PRE-TEST CAL.
		9/30/2004	9:18:09	-0.3	393.4	
		10/1/2004	10:40:03	-0.6	391.7	
		10/1/2004	15:32:02	-0.2	391.9	
		10/6/2004	9:29:52	-0.5	393.2	
		10/6/2004	15:17:06	-0.4	391.8	
		10/7/2004	8:23:00	-0.4	391.5	
		10/7/2004	15:28:06	-0.7	392.3	
		10/8/2004	8:21:39	-0.2	391.9	POST-TEST CAL.
		10/8/2004	11:10:13	-0.7	391.6	
		10/11/2004	13:16:23	-0.5	499.2	POST-TEST CAL.

## Pre-Test Linearity Check - 09/29/04

Actual Force (N)	Recorded Force (N)
0	0
222	222
445	445
498	498

## Post-Test Linearity Check - 10/08/04

Actual Force (N)	Recorded Frc(N)
0	0
222	223
445	446
498	499

# **DAILY CALIBRATIONS CONTINUED (3 of 3)**

VEHICLE: 2005 Chevrolet Equinox FWD LT

NHTSA No. C50100

Dynamic Speed Calibration for Unit 5352

Desired speed value is: 100 km/h

Allowed deviation is: 1.6 km/h

Desired time value is: 36 seconds

Allowed deviation is: + or - 0.6 seconds

Light beam  
speed sensor

Drive vehicle  
at a steady  
100 km/h  
through a  
kilometer.

"Date"	"Time"	"Speed"	Time"
stp	stp	km/h	sec
9/29/2004	15:08:32	100.7	35.97
9/30/2004	9:22:38	100.1	36.16
10/1/2004	10:41:39	100.0	36.22
10/1/2004	15:34:40	100.0	36.16
10/6/2004	9:32:36	100.8	36.13
10/6/2004	15:21:04	100.1	36.18
10/7/2004	8:26:18	100.2	36.14
10/7/2004	15:31:50	100.3	36.19
10/8/2004	8:36:36	100.1	36.34
10/8/2004	11:12:47	100.3	36.04

PRE-TEST CAL.

POST-TEST CAL.

## APPENDIX A

Copy of Manufacturer's Sticker

note;

PAGE 59

motion  
REPORTS

## APPENDIX B

### Discussion on Data

## DISCUSSION ON DATA

### Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			

INT or INIT	-	Initial Part of Stop
MID	-	Middle of Stop
END	-	End of Stop

All stops were made manually.

## APPENDIX C

### Contractor's Comments Procedure Modifications and Test Facility

Comments for vehicle C50100.

For all recorded decelerations:

The recorded *average* deceleration values for the tests are slightly lower than that which is required or targeted for certain test sections. However, in all cases and in reality, the driver maintained the correct required/target deceleration values for the majority of time for each of those stops. The recorded deceleration is acquired from the moment the service brake pedal is moved until the vehicle reaches zero speed. Therefore, the time needed to achieve the target deceleration (rise time) and the time the vehicle goes from the target deceleration to zero (fall time) is included in the average deceleration calculation. The rise and fall times were added to the entire length of the stops. Hence the recorded average deceleration values were generally and slightly less than the required/target deceleration values.

For Data Sheets 16 & 22 – Antilock Functional Failure at LLVW and GVWR, respectively, the ABS and the Electronic Brake Distribution (EBD) - Variable Proportioning - are integral. Failing the ABS also fails the EBD. The EBD cannot be failed separately. Therefore, Data Sheets 17 and 23 are not included.

For Data Sheets 20 and 21, the Hydraulic Circuit Failures, the tests were performed in the following order: Data Sheet 21 and 20. This was due to the difficult accessibility of accessing the master cylinder output ports



### 7.5-MILE TEST TRACK

The 7.5-mile test track encloses a 1,600-acre area, one mile wide and 3.5 miles long.

The track has a downward grade, north to south, of 0.228 percent and a cross slope in the straightaways of 3/16 inch per foot. The 1.88 mile long straightaways flow into transition areas 2,300 feet in length and then into 5,275-foot long curves with a constant radius of 2,400 feet. The 36-foot wide straightaways and the 42-foot wide curves provide three test lanes. Paved berms, 12 feet in width, border the straightaways and the inside of the curves.

As a vehicle moves toward the outside of the track in the curves, it encounters a progressively steeper bank. The inside lane (or "slow" lane) has a bank of 10 degrees allowing a neutral speed of 80 mph with no side forces. In the center lane, the slope increases to 19 degrees resulting in a neutral speed of 110 mph. The outside lane's 28-degree bank allows a 140 mph neutral speed. Rimming the outer lane is a seven-foot safety lane culminating in a 36-degree slope at the guardrail.

The facility is paved with Portland cement concrete. It carries a maximum single axle load of 36,000 pounds and a maximum tandem axle load weight of 48,000 pounds. Special provisions can be made for heavier weight loads.

With 22.5 lane miles, our track will accommodate many vehicles simultaneously. Research which utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, drive line efficiency tests, and the determination of vehicular acceleration and cruise characteristics. In addition, it supports maximum speed determination, road load power, noise and emission measurements and tire durability test programs.

The 7.5-mile test track can be used in conjunction with other facilities at TRC. It provides an excellent area for pre-test conditioning of equipment such as brake burnishing, tire break-in, and vehicle warm-up.

## TRC SKID PAD

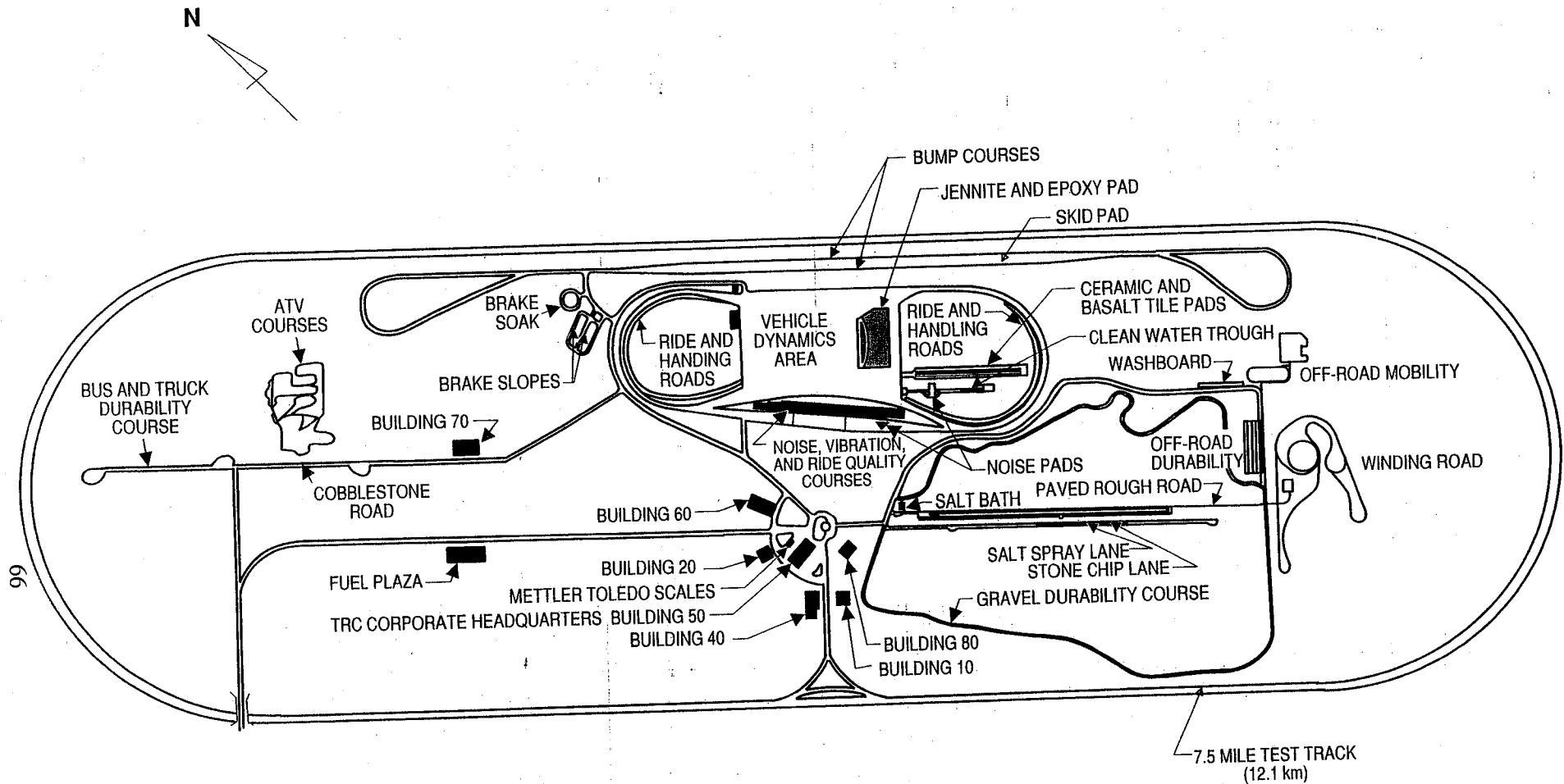
The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 g's lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

The skid pad is paved with Portland cement. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and vehicle top speed determination.



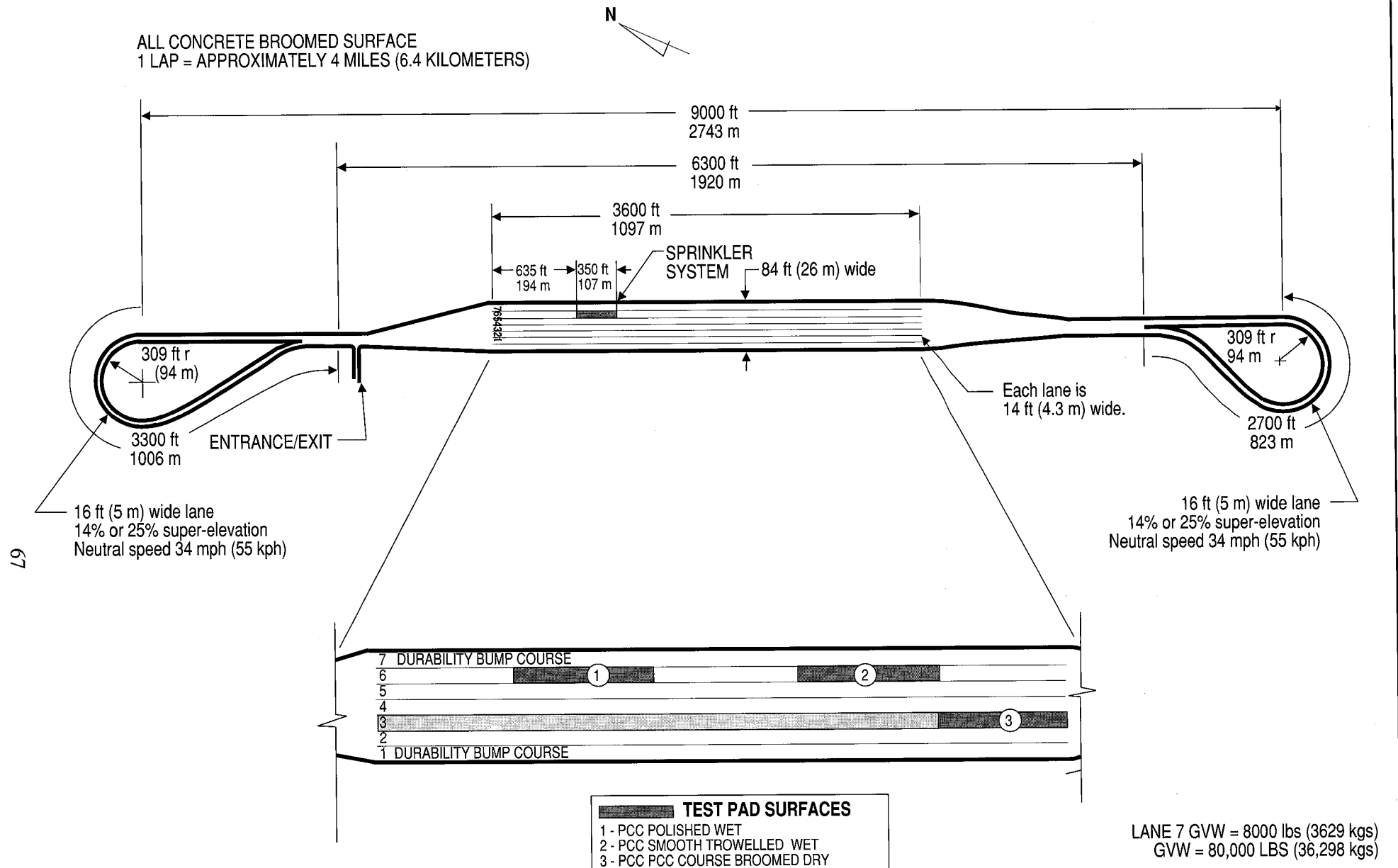
NOT TO SCALE

## TEST FACILITY DETAIL



**TRANSPORTATION RESEARCH CENTER INC.**  
EAST LIBERTY, OHIO 43319-0367

F-15 0601



NOTE: BUMP COURSES PARALLEL THE PERIMETERS OF LANES 1 AND 7.

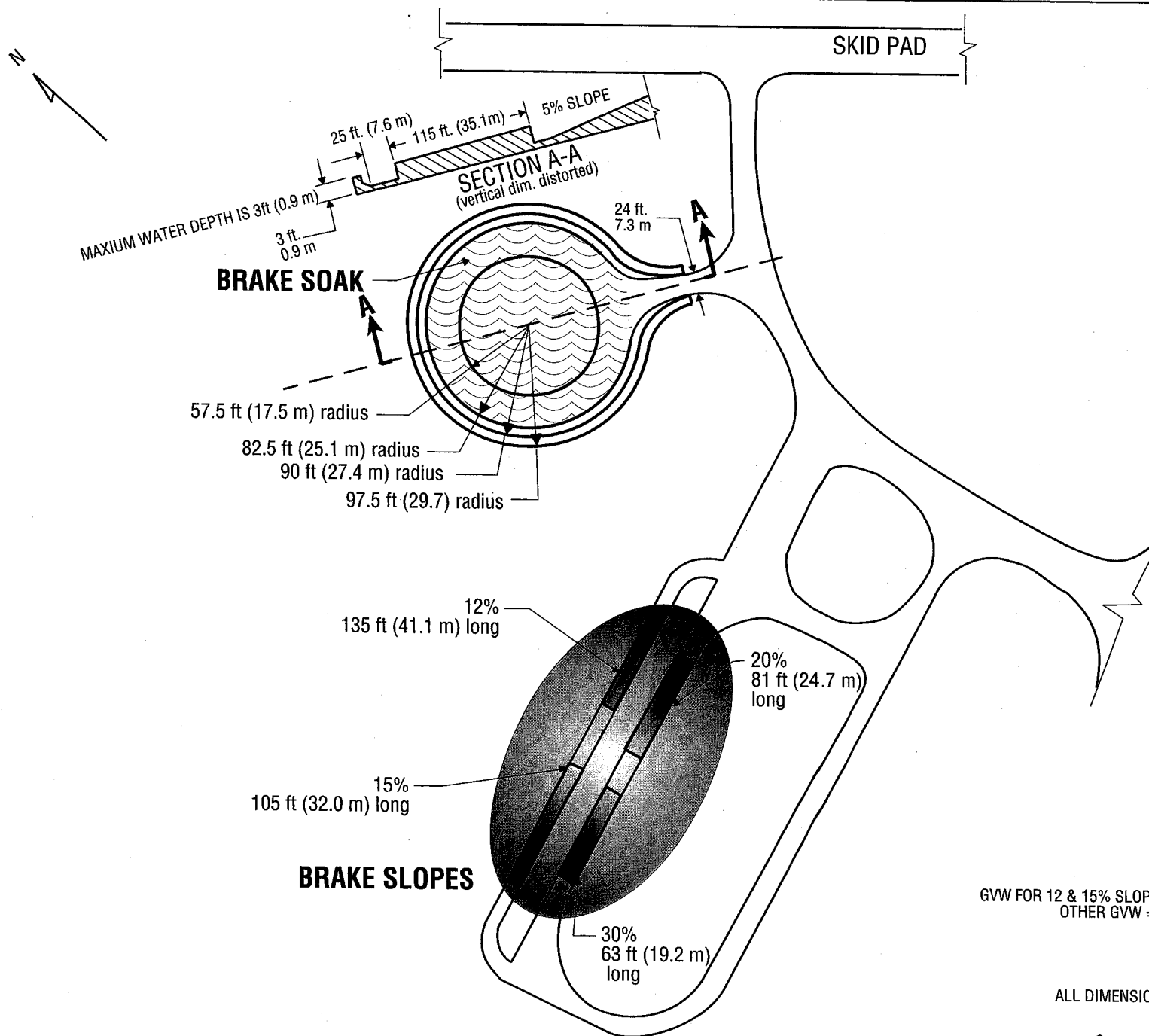
Not to scale  
All dimensions are approximate

SKID PAD

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F-13 0699



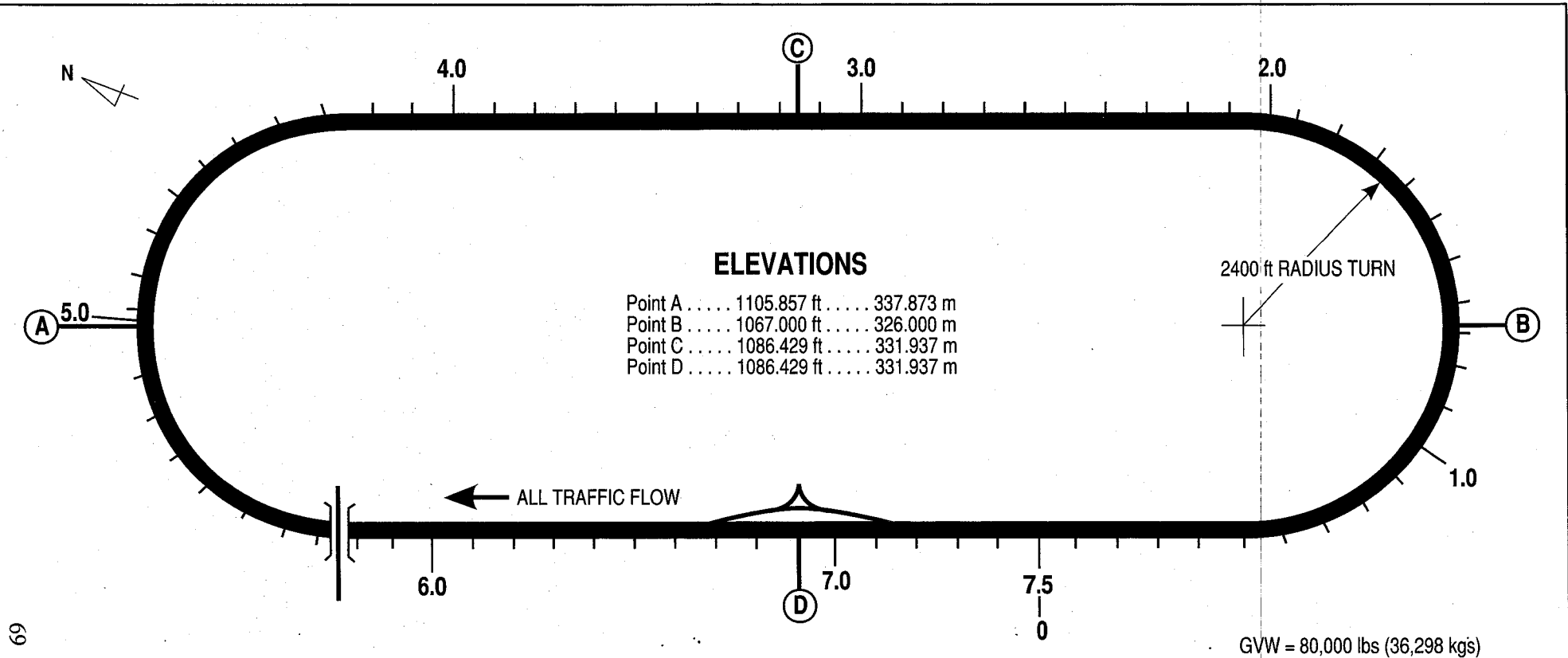
## BRAKE SOAK and BRAKE SLOPES



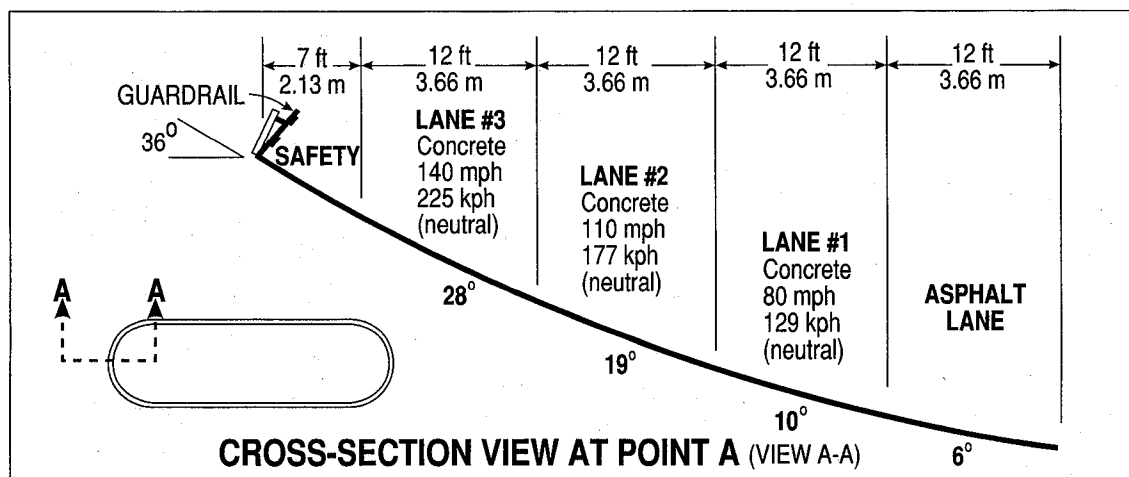
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F-3 0500



69



DISTANCES	
Lane 3	..... 7.539 mi ..... 12.133 km
Lane 2	..... 7.521 mi ..... 12.104 km
Lane 1	..... 7.507 mi ..... 12.081 km
Point A to Point B	..... 3.333 mi ..... 5.364 km
Point C to Point D	..... .947 mi ..... 1.524 km

NOT TO SCALE

7.5-MILE TEST TRACK



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F-10 0498

APPENDIX D

Notice of Possible Non-Compliance

This vehicle (C50100) met the requirements of the FMVSS 135 standard.